

order to provide the Services to **Hidalgo County**. This Contract does not extend to any third parties any duties or benefits conferred in any manner hereunder or otherwise.

2. Company and Provider hereby promise and agree to render and provide, during the term of this Contract, and shall be obligated to render and provide the Services in accordance with the RFB Packet within **Hidalgo County** following a request for Services by the **County** or its designated agent. Company and Provider agree in performing the Services that it will use proper professional standards, comply with any and all appropriate laws and regulations in providing the Services, and devote such time as is necessary to safely and efficiently provide the Services.

3. This Contract shall be for a period of One (1) year, **(on an as needed basis)**, commencing on May 01, 2018 (or upon Commissioner's Court Approval and fully executed document), and expiring on April 30, 2019, and may be extended at the sole discretion of the County for an additional two (2) one (1) year term under the same rates, terms and conditions. Hidalgo County also reserves the right to continue this sealed bid for an additional sixty (60) day grace period at the end of the contract term for unforeseen delay of award for the next term and contingent upon cost remaining unchanged.

4. As a condition of this Contract, Company and Provider shall hold and maintain throughout the term of this Contract all licenses and permits required, or which may be required by any authority during the term hereof to provide the Services. If such license or permit is suspended or revoked, this Agreement shall automatically be terminated and Company and Provider shall immediately notify the County.

5. All trucks or vehicles operated by the Company/Provider to perform the Services shall contain all equipment required by any authority to operate on streets and roads and all persons in the employ of Company/Provider who operate such trucks or vehicles shall have the required licenses, qualifications, skill and expertise to perform such Services and shall comply with all laws, rules and regulations prescribed by any agency or authority having jurisdiction with regard to the operation of such trucks or vehicles in providing the Services.

6. As consideration for rendering the Services provided for in this Contract, the County agrees to pay Company the amounts specified in Exhibit "B" attached hereto payable against written invoice submitted by Company in accordance with the Texas Prompt Payment Act, Tex. Govt. Code Ch. 2251.

7. Company/Provider shall provide insurance in force on all its vehicles and all persons connected with providing services under this Contract naming County as an additional insured (with the coverages and in the amounts described in Exhibit "C" attached hereto and incorporated herein at this point for all purposes), and shall furnish to County certificates of such insurance coverage.

8. Company/Provider shall provide a sufficient number of trucks, vehicles, personnel, and equipment available to safely and efficiently provide the Services.

9. Company/Provider **shall indemnify and hold harmless County, its elected officials, employees and agents from any and all claims, damages, losses, and expenses including attorney's fees for the defense of any action against County arising out of, resulting from, or connected with the provision of the Service by Company/Provider under this Contract. Said indemnity shall cover any act or failure to act by the Company/Provider, its agents or employees.**

10. This Contract shall not be assignable in whole or in part by either party without the prior written consent of the other party.

11. It is expressly agreed that this Contract and the performance by the parties hereunder does not create any agency relationship or master-servant relationship that County has no supervision of the performance of the Services provided by Company/Provider, and that Company/Provider is an independent contractor under this Contract.

12. Any notice required or permitted to be given hereunder shall be in writing and shall be delivered personally or sent by certified mail, postage prepaid, as set forth below:

If to County: **The County of Hidalgo**
 Attn: County Judge
 100 E. Cano
 Edinburg, Texas 78539

If to Company: **TIBH INDUSTRIES, INC.**
 Attn: Rosa M. Valdez
 1011 E 53 ½ Street
 Austin, TX 78751

13. In case any one or more of the provisions contained in this Agreement shall for any reason be held to be invalid, illegal or unenforceable in any respect, such invalidity, illegality, or unenforceability shall not affect any other provision thereof and this Agreement shall be construed as if such invalid, illegal, or unenforceable provision had never been contained herein.

14. This Agreement may be terminated by County without cause upon thirty (30) days written notice.

15. This Agreement shall be binding upon and inure to the benefit of and be enforceable by the parties hereto and their respective heirs, executors, administrators, legal representatives, successors, and assigns where permitted by this Agreement.

16. This Agreement shall be governed by and construed in accordance with the laws of the State of Texas and shall be performable in Hidalgo County.

17. In the event that, during any term hereof, the Commissioners Court does not appropriate sufficient funds to meet the obligations of County under this Agreement, County may terminate this Agreement upon ninety (90) days written notice to Provider and Company. County agrees, however, to use reasonable efforts to secure funds necessary for the continued performance of this Agreement. The parties intend this provision to be a continuing right to terminate this Agreement at the expiration of each budget period of County.

18. This Agreement contains the entire contract between the parties hereto, and each party acknowledges that neither has made (either directly or through any agent or representative) any representation or agreement in connection with this Agreement not specifically set forth herein. This Agreement may be modified or amended only by an agreement in writing executed by the parties hereto, and not otherwise.

19. Nothing in this Agreement is intended to and County does not hereby waive, release or relinquish any right to assert any of the defenses County enjoys by virtue of the state or federal constitution, laws, rules or regulations, and any sovereign, official or qualified immunity available to County as to any claim or action of any person, entity, or individual against County.

20. Company/Provider, including subcontractors, assignees and successors in interest, ensures that no person shall on the grounds of race, religion, color, national origin, sex, age, disability, or any other protected class under law, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination or retaliation under any federally or non-federally funded program or activity when providing any services described herein under this contract/agreement.

21. The parties hereto covenant and agree that they will execute each such other and further instruments and documents as are or may become necessary or convenient to effectuate and carry out the terms of this contract/agreement.

EXECUTED and effective as of the day and year first written above.

COUNTY OF HIDALGO

Ramon Garcia
Ramon Garcia, County Judge

ATTEST:

Arturo Guajardo Jr.
Arturo Guajardo Jr., County Clerk



APPROVED BY
COMMISSIONERS' COURT
ON: 4/24/18 *gr*

Company: TIBH Industries, Inc.

By: Rosa M. Valdez

Printed Name: Rosa M. Valdez /

Title: Regional Marketing Manager / CEO

Provider: RGR Industries, Inc.

By: Ricardo Guerra

Printed Name: Ricardo Guerra

Title: President

Note: Need signature for the Provider as well.

Approved By Commissioners Court On: _____

APPROVED AS TO FORM:
Hidalgo County Office of District Attorney
Ricardo Rodriguez, Jr.

By: _____

Victor M. Garza
Assistant District Attorney

EXHIBIT “A”

SPECIFICATIONS

ATTACHMENT A SCOPE OF WORK

HARDWARE:

Perform "Metal Beam Guard Fence and Elements Repair".

GENERAL

Prior to beginning operations, a conference between representatives of the County and the Community Rehabilitation Program (CRP) will be arranged. In this meeting, the CRP will outline the proposed method of accomplishing this work.

The CRP is to visit the site to make its own examination of the work areas. The CRP will carefully examine these specifications and secure from the Department any additional information that may be essential for a clear and full understanding of the work.

Scheduled work that falls on a National Holiday will be performed on the following work day. National Holidays as defined in the "Texas Standard Specification 2014" are January 1, the last Monday in May, July 4, the first Monday in September, the fourth Thursday in November, December 24 and December 25.

The CRP is responsible for damage to County equipment, plants, shrubs, and County employee vehicles caused by its maintenance activities.

All lost and found items will be turned over to the County Representative.

The CRP is responsible for its employees reporting daily any needed repairs. This information will be reported to the County's representative.

All personal protective equipment (PPE) will be provided by the CRP.

Clear and remove from all work sites, surplus and waste materials and leave the site in a neat and aesthetically pleasing condition.

Work is on an as-needed basis and as directed by the County.

Perform work Monday through Friday during daylight hours unless otherwise approved. Close no more than one (1) lane at a time

If closing a lane is necessary, closure time will be Monday through Thursday, 9:00 A.M. to 3:00 P.M. and Friday, 9:00 A.M. to 12:00 P.M. (noon).

The CRP keeps all unusable salvaged material. Material that is deemed usable by the County shall be returned to [Hidalgo County](#).

EQUIPMENT AND LABOR

The CRP will not be allowed to begin work until all equipment has been inspected, and found to be in good working condition, and deemed safe by [the County](#).

BARRICADES, SIGNS, AND TRAFFIC HANDLING

The CRP will furnish and install all signs, barricades and other incidentals necessary for proper traffic control, in accordance with the 2011 "Texas Manual on Uniform Traffic Control Devices and as directed. All warning signs will be factory made and in satisfactory condition.

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ITEM 502 BARRICADES, SIGNS, AND TRAFFIC HANDLING

The CRP shall provide to the Engineer a letter certifying that all truck-mounted attenuators (TMA) used on the contract that were purchased on or after October 1, 1998, have been found to be crashworthy using the criteria outlined in the National Cooperative Highway Research Program (NCHRP) Report 350. If the TMA was purchased prior to October 1, 1998, a letter certifying crashworthiness using the criteria outlined in either (NCHRP) reports 230 or 350 shall be provided to the Engineer.

Provide flagmen properly attired in a white hard hat, approved safety vest and stop/slow paddle. Provide two-way radios in areas where flagmen do not have visual contact with one another or cannot communicate with one another.

Provide shadow vehicles equipped with Truck Mounted Attenuators (TMA) when performing work on the expressway as shown on Traffic Control Plan (TCP) standards (2 series).

Limit lane closures to a maximum of three (3) miles. If more than one (1) lane closure location is desired, provide a minimum of a 2 mile passing zone between locations. Provide a separate sign set up for each location.

Ensure equipment and materials are a minimum of 30 feet from the edge of the travel lane during non-working hours.

Erect signs in locations not obstructing the traveling public's view of the normal roadway signing or necessary sight distance at intersections and curves.

All signs will conform to the Roadside Traffic Control Plan (RS-TCP-05) (see attached).

ITEM 544 "Guardrail End Treatments"

Label "end treatment type" on backside of unit at time of installation.

ITEM 545 CRASH CUSHION ATTENUATORS

Damaged crash cushion attenuators beyond repair will be replaced with the same attenuator model or similar. Exemptions to the similar model replacements will be determined by the Engineer to satisfy crash test levels (TL-2 for roadways 45 mph or less and TL-3 for roadways greater than 50 mph).

Crash cushions needing to be moved and reset will be paid under Item 545-6003 regardless of attenuator model. Foundations, materials, incidentals, etc. is subsidiary to this item. Crash cushions needing to be removed will be paid under Item 545-6005 regardless of attenuator model. Removing, materials, hauling, incidentals, etc. is subsidiary to this item.

The CRP will have 24 hours to respond via e-mail, phone, fax, etc. confirming the request by the County to repair damaged facility. The CRP will have 24 hours to **contact and advise Hidalgo County of timeline or schedule for work to be completed/performed** This includes delivery of materials.

The CRP is to return any used materials to the County. Any material deemed salvageable by the State will also be returned.

The CRP is to avoid damaging utilities during guard fence operations by contacting utility companies and locating all underground lines in the vicinity of the work.

The CRP will furnish crew(s) and equipment capable of maintaining work in a continuous manner for the completion of the work on schedule, as approved.

The CRP will use care to avoid disturbing pavement surfaces. Any damaged caused by the normal operation outside the work area will be paid by the CRP.

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Furnish and place topsoil to repair areas disturbed by construction operations, as approved. The topsoil and placement will not be paid for directly, but will be considered subsidiary to the various bid items. (?)

ITEM 7650 CLEAN TRAFIC ATTENUATORS

Remove debris at locations shown on the plans, or as directed by the Engineer. Dispose of debris off the right of way. (?)

MEASUREMENT

The unit of measurement for "Purchase Guardrail Materials and/or Turnkey Solutions" will be based upon the various Items of work as specified on Attachment B.

PAYMENT

Work performed as prescribed by this specification, measured as provided under "Measurement" will be paid for at the contract unit price, which will be full compensation for furnishing all labor, equipment, materials and incidentals necessary to complete the work. Payment will be made once each month after satisfactory completion of work.

POINT OF CONTACT (?)

	Contact	Telephone No
H. C. Precinct 1		
H. C. Precinct 2		
H. C. Precinct 3		
H. C. Precinct 4		



Item 540

Metal Beam Guard Fence

1. DESCRIPTION

Furnish, install, replace, or adjust metal beam guard fence consisting of metal beam rail elements, hardware, blocks, and support posts.

2. MATERIALS

Provide samples of metal beam rail elements, terminal sections, bolts, and nuts for compliance testing according to Tex- 708-I and Tex-713-I to verify physical and chemical properties meet AASHTO M 180 when directed.

Obtain materials at the locations shown on the plans when the plans designate that the Department will furnish materials.

- 2.1. **Metal Beam Rail Elements.** Furnish new metal beam rail elements, transitions, anchor sections, and terminals that meet the requirements of Table 1 and are from a manufacturer on the Department's MPL of rail element manufacturers.

Type I or II is required, unless otherwise shown on the plans. Base metal for metal beam rail elements must not contain more than 0.04% phosphorous or more than 0.05% sulfur.

Warped or deformed rail elements will be rejected.

Table 1
Rail Element Requirements

Specification	AASHTO M 180
Class	A— Base metal nominal thickness 0.105 in. B— Base metal nominal thickness 0.135 in.
Type	I— Zinc-coated 1.80 oz. per square foot minimum single-spot. II— Zinc-coated 3.60 oz. per square foot minimum single-spot. IV— Weathering Steel (required when shown on the plans).
Shape	W-Beam Thrie Beam W-Beam to Thrie Beam Transition
Markings	Permanently mark each metal beam rail element with the information required in AASHTO M 180. In addition, permanently mark all curved sections of metal beam rail element with the radius of the curved section in the format "R=XX ft." Markings must be on the back of the metal beam rail section away from traffic and visible after erection.

- 2.2. **Posts.** Furnish new round timber, rectangular timber, or rolled steel section posts in accordance with details shown on the plans and the following requirements:

- 2.2.1. **Timber Posts.** Meet the requirements of DMS-7200, "Timber Posts and Blocks for Metal Beam Guard Fence." Purchase from a manufacturer or supplier on the Department's MPL of timber treating plants and suppliers.

- 2.2.2. **Steel Posts.** Provide rolled sections conforming to the material requirements of ASTM A36. Drill or punch posts for standard rail attachment as shown on the plans. Galvanize according to Item 445, "Galvanizing." Low-fill culvert posts may be fabricated as galvanized "blanks" with the rail hole and the final height field
- fabricated. Treat all exposed post surfaces caused by the field fabrication in accordance with Section 445.3.5., "Repairs."
- 2.3. **Blocks.** Furnish new rectangular timber or composite blocks in accordance with details shown on the plans and the following requirements:
- 2.3.1. **Timber.** Meet the requirements of DMS-7200 "Timber Posts and Blocks for Metal Beam Guard Fence." Purchase from a manufacturer or supplier on the Department's MPL of timber treating plants and suppliers.
- 2.3.2. **Composite.** Meet the requirements of DMS-7210 "Composite Material Posts and Blocks for Metal Beam Guard Fence." Purchase from a manufacturer on the Department's MPL of composite material blocks and posts.
- 2.4. **Fittings.** Furnish new fittings (bolts, nuts, and washers) according to the details shown on the plans and galvanized according to Item 445, "Galvanizing."
- 2.5. **Terminal Connectors.** Furnish new terminal connectors, where required, meeting the material and galvanizing requirements specified for metal beam rail elements.
- 2.6. **Concrete.** Furnish concrete for terminal anchor posts meeting the requirements for Class A concrete as required in Item 421, "Hydraulic Cement Concrete."
- 2.7. **Curb.** If indicated in the details, furnish the curb shown with metal beam guard fence transition as required by Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
- 2.8. **Terminal Anchor Posts.** Furnish new terminal anchor posts from steel conforming to the material requirements of ASTM A36. Fabricate posts according to Item 441, "Steel Structures." Galvanize terminal anchor posts after fabrication according to Item 445, "Galvanizing."
- 2.9. **Driveway Terminal Anchor Posts.** Furnish new terminal anchor posts from steel conforming to the material requirements of ASTM A36. Fabricate posts according to Item 441, "Steel Structures." Galvanize terminal anchor posts after fabrication according to Item 445, "Galvanizing."
- 2.10. **Downstream Anchor Posts.** Furnish new terminal anchor posts consisting of new rectangular timber and new steel foundation tubes according to details shown on the plans.
- 2.11. **Downstream Anchor Hardware.** Furnish new hardware (brackets, plates, struts, cable, etc.) according to the details shown on the plans and galvanized according to Item 445, "Galvanizing."
- 2.12. **Controlled Released Terminal (CRT) Posts.** Furnish new CRT posts according to the details shown on the plans and conforming to the requirements of DMS-7200, "Timber Posts and Blocks for Metal Beam Guard Fence." Purchase from a manufacturer or supplier on the Department's MPL of timber treating plants and suppliers.

3. CONSTRUCTION

Install posts and rail elements according to details shown on the plans.

- 3.1. **Posts.** Install posts by either drilling or driving.
- 3.1.1. **Drilling.** Drill holes and set posts plumb and firm to the line and grade shown. Backfill posts by thoroughly compacting material to the density of adjacent undisturbed material.

- 3.1.2. **Driving.** Drive posts plumb with approved power hammers (steam, compressed air, vibratory, or diesel) or gravity hammers to the line and grade shown while preventing damage to the post. Use pilot holes when required and approved. Determine the size and depth of pilot holes based on results of the first few posts
- driven. Thoroughly tamp loosened soil around the post, fill voids with suitable material, and thoroughly compact to the density of adjacent undisturbed material.
- 3.2. **Rail Elements.** Erect metal beam rail elements to produce a smooth, continuous rail paralleling the line and grade of the roadway surface or as shown on the plans. Bolt rail elements end-to-end and lap splices in the direction of traffic. Field-drill or punch holes in rail elements for special details, only when approved.
- 3.3. **Short Radius.** Special rail fabrication with a required radius must be as shown on the plans.
- 3.4. **Terminal Anchor Posts.** Embed terminal anchor posts in concrete, unless otherwise shown on the plans.
- 3.5. **Galvanizing Repair.** Repair all parts of galvanized steel posts, washers, bolts, and rail elements after erection where galvanizing has become scratched, chipped, or otherwise damaged. Repair in accordance with Section 445.3.5., "Repairs."
- 3.6. **Guardrail Adjustment.** Work includes vertical adjustment, horizontal shift, and overlap of the rail element to meet the detail shown on the plans.
- 3.7. **Curb.** If indicated in the details, construct the curb shown with metal beam guard fence transition as required by Item 529, "Concrete Curb, Gutter, and Combined Curb and Gutter."
- 3.8. **Driveway Terminal Anchor Posts.** Embed terminal anchor posts in concrete, unless otherwise shown on the plans.
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4. MEASUREMENT

- 4.1. **Guard Fence.** Measurement will be by the foot of fence. Fence will be measured on the face of the rail in place, from center-to-center of end splice locations.
- 4.2. **Terminal Anchor Sections.** Measurement will be by each section, complete in place, consisting of a terminal anchor post and one 25-ft. section of rail element.
- 4.3. **Transitions.** Transitions for rail connection will be measured by each transition.
- 4.4. **Short Radius.** Measurement will be by the foot to the nearest whole foot along the face of the rail in place, from beginning of radius (first CRT post) to the end of radius.
- 4.5. **Driveway Terminal Anchor Section.** Measurement will be by each section, complete in place, consisting of a driveway terminal anchor post and one 6-ft. section of rail element.
- 4.6. **Downstream Anchor Terminal.** Measurement will be by each section, complete in place, consisting of one W-Beam end section, 2 downstream anchor posts, and one rail section.
- 4.7. **Long Span System.** Measurement will be by the foot of fence. Fence will be measured on the face of the rail, in place, between the first CRT and last CRT posts in the system.

5. PAYMENT

The work performed and material furnished in accordance with this Item and measured as provided under "Measurement" will be paid at the unit price bid for "Metal W-Beam Guard Fence" of the post type specified; "Metal Thrie Beam Guard Fence" of the post type specified; "Terminal Anchor Section"; "Metal Beam Guard Fence Transition" of the type specified; "Metal W-Beam Guard Fence Adjustment"; "Metal Thrie Beam Guard Fence Adjustment"; "Terminal Anchor Section Adjustment"; "Transition Adjustment"; "Short Radius"; "Driveway Terminal Anchor Section"; "Downstream Anchor Terminal"; or "Metal Beam Guard Fence (Long Span System)." When weathering steel is required, Type IV will be specified.

Samples furnished to the Department for testing purposes, special backfill materials, and concrete curbs will not be paid directly but are subsidiary to this Item.

- 5.1. **Guard Fence.** The price bid for "Metal W-Beam Guard Fence" or "Metal Thrie Beam Guard Fence" is full compensation for materials, hauling, erection, setting posts in concrete, blocks, driving posts, excavating, backfilling, equipment, labor, tools, and incidentals.
- 5.2. **Terminal Anchor Section.** When a separate bid item is specified, the price bid for "Terminal Anchor Section" is full compensation for furnishing the rail element, anchor assembly, terminal anchor post, and foundations; installing the rail element anchor assembly and the terminal anchor post and foundations; excavation and backfilling; and equipment, labor, tools, and incidentals.
- 5.3. **Transition.** The price bid for "Metal Beam Guard Fence Transition" is full compensation for furnishing nested sections of Thrie Beam; nested sections of W-Beam; Thrie Beam to W-Beam transitional rail piece, posts, concrete, curb, and connections to W-Beam guard fence and bridge rails; Thrie Beam terminal connectors; excavation and backfilling; and equipment, labor, tools, and incidentals.
- 5.4. **Guardrail Adjustment.** The price bid for "Metal W-Beam Guard Fence Adjustment," "Metal Thrie Beam Guard Fence Adjustment," "Terminal Anchor Section Adjustment," and "Transition Adjustment" is full compensation for furnishing materials not supplied by the Department, drilling holes in posts, hauling, erection, blocks, excavation, backfill, cleaning, salvaging materials, setting rail element anchor assembly and terminal anchor post, removal of rail element, concrete, curb, equipment, labor, tools, and incidentals.
- 5.5. **Short Radius.** The price bid for "Short Radius" is full compensation for furnishing special rail fabricated metal beam guard fence, CRT posts, steel posts, sand barrels, end terminal, cable anchor, materials, hauling, erection, blocks, driving posts, excavating, backfilling, equipment, labor, tools, and incidentals.
- 5.6. **Driveway Terminal Anchor Section.** The price bid for "Driveway Terminal Anchor Section" is full compensation for furnishing the rail element, driveway anchor assembly, driveway terminal anchor post, and foundations; installing the rail element anchor assembly and the driveway terminal anchor post and foundations; excavation and backfilling; and equipment, labor, tools, and incidentals.
- 5.7. **Downstream Anchor Terminal.** The price bid for "Downstream Anchor Terminal" is full compensation for furnishing the rail element, W-Beam end section, guardrail anchor bracket, shelf angle bracket, channel strut, downstream anchor posts, breakaway cable terminal (BCT) cable anchor assembly, and foundations; installing the BCT cable anchor assembly and the downstream anchor post and foundations; excavation and backfilling; and equipment, labor, tools, and incidentals.
- 5.8. **Long Span System.** The price bid for "Metal Beam Guard Fence (Long Span System)" is full compensation for furnishing the rail element, CRT posts, materials, hauling, erection, blocks, driving posts, excavating, backfilling, equipment, labor, tools, and incidentals.



Item 542

Removing Metal Beam Guard Fence

1. DESCRIPTION

Remove existing metal beam guard fence and store at locations shown on the plans or as directed.

2. CONSTRUCTION

Remove rail elements in original lengths. Remove fittings from the posts and the metal rail and then pull the posts. Do not mar or damage salvageable materials during removal.

Completely remove posts and any concrete surrounding the posts. Furnish backfill material and backfill the hole with material equal in composition and density to the surrounding soil unless otherwise directed.

Cut off or bend down deadman eyebolts to an elevation at least 1 ft. below the new subgrade elevation and leave in place along with the deadman.

Neatly stack salvaged materials to be retained by the Department at designated sites shown on the plans. Properly dispose of unsalvageable materials in accordance with federal, state, and local regulations. Repair or replace Contractor-damaged salvageable material at the Contractor's expense.

3. MEASUREMENT

This Item will be measured by the foot for "Remove Metal Beam Guard Fence" in its original position. Measurement will be made along the face of the rail, in place, including metal beam guard fence transitions, from center-to-center of end posts and from terminal points shown on the plans.

When "Remove Terminal Anchor Section" is specified as a separate bid item, measurement will be made for each removed section. A terminal anchor section consists of one post, one 25-ft. rail element, and associated hardware.

When "Remove Downstream Anchor Terminal" is specified as a separate bid item, measurement will be made for each removed section. Downstream anchor terminal consists of 2 posts, 1 section, and associated hardware.

4. PAYMENT

The work performed and measured as provided under "Measurement" will be paid at the unit price bid for "Remove Metal Beam Guard Fence," "Remove Terminal Anchor Section," and "Remove Downstream Anchor Terminal." This price will be full compensation for removing materials; loading, hauling, unloading, and storing or disposal; furnishing backfill material; backfilling postholes; and equipment, labor, tools, and incidentals.

Removal of curb associated with the metal beam guard fence transitions will not be paid directly but will be subsidiary to this Item.



Item 543

Cable Barrier System

1. DESCRIPTION

Furnish and install a cable barrier system and cable barrier terminal sections at the locations shown on the plans.

2. MATERIALS

Furnish a new cable barrier system and cable barrier terminal sections in accordance with the details shown on the plans and on the manufacturer's shop drawings, or equal as approved. Cable barrier systems approved for use have passed NCHRP Report 350 or MASH of the test level specified (TL-3, TL-4, etc.) with a maximum deflection of 8 ft.

Furnish pre-stretched cable.

Furnish Class A concrete in accordance with Item 421, "Hydraulic Cement Concrete."

Furnish delineators as shown on the plans and in accordance with Item 658, "Delineator and Object Marker Assemblies."

3. CONSTRUCTION

Install cable barrier system in accordance with the details, dimensions, and requirements shown on the plans and manufacturer's recommendations. Install cable barrier terminal sections in accordance with the details shown on the plans and manufacturer's recommendations.

Place posts into steel sleeves in a concrete foundation unless otherwise shown on the plans. Locate terminal sections at locations as shown on the plans. Repair or replace damaged parts immediately. Provide an installation and repair manual specific to the cable barrier system and cable barrier terminal sections.

Locate barrier delineators at a maximum spacing of 100 ft. and according to TMUTCD or as shown on the plans. Install barrier delineators in accordance with manufacturer's recommendations.

3.1. **Training.** Provide training as specified by the Department.

4. MEASUREMENT

This Item will be measured by the foot of cable barrier system and by each cable barrier terminal section installed.

5. PAYMENT

The work performed and the materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Cable Barrier System" of the test level specified (TL-3, TL-4, etc.), "Cable Barrier System" of the test level specified (TL-3, TL-4, etc.) and post spacing specified, and "Cable Barrier Terminal Section" of the test level specified (TL-3, TL-4, etc.). This price is full compensation for furnishing cable barrier system, cable barrier terminal section, concrete, delineators, equipment, labor, tools, and incidentals. Delineators will not be measured or paid for directly but will be considered subsidiary to this Item



Item 544

Guardrail End Treatments

1. DESCRIPTION

Furnish and install, move, or remove guardrail end treatments.

2. MATERIALS

Furnish new materials from the Department's MPL of rail element manufacturers. Obtain materials at the location shown on the plans when furnished by the Department.

3. CONSTRUCTION

Install guardrail end treatments in accordance with manufacturer's assembly and installation requirements and the details shown on the plans. Provide the Engineer with manufacturer's installation and repair manuals specific to the guardrail end treatment.

Move or remove guardrail end treatments in accordance with the plans and as directed. Deliver salvageable materials in accordance with the plans or as directed. Dispose of unsalvageable materials in accordance with federal, state, and local regulations.

4. MEASUREMENT

This Item will be measured by each guardrail end treatment.

5. PAYMENT

The work performed and the materials furnished in accordance with this Item and measured as provided for under "Measurement" will be paid for at the unit price bid for "Guardrail End Treatment (Install)" of the post and type specified where applicable, "Guardrail End Treatment (Move and Reset)," or "Guardrail End Treatment (Remove)." This price is full compensation for foundations, materials, stockpiling, disposal of unsalvageable materials, equipment, labor, tools, and incidentals.

Payment for "Guardrail End Treatment (Move and Reset)" will include each guardrail end treatment removed from a stockpile or from an existing location and reset in a new location as detailed on the plans or as directed.

Payment for "Guardrail End Treatment (Remove)" will include each guardrail end treatment removed from an existing location and stockpiled at the location designated on the plans, disposed, or as otherwise directed.



Item 545

Crash Cushion Attenuators

1. DESCRIPTION

Furnish and install, move and reset, or remove crash cushion attenuators.

2. MATERIALS

2.1. **Crash Cushion Attenuators.** Furnish new crash cushion attenuators in accordance with the details shown on the plans and on the manufacturer's shop drawings. Obtain crash cushion attenuators at the location shown on the plans when furnished by the Department.

2.2. **Concrete.** Furnish Class S concrete for pads that meets Item 421, "Hydraulic Cement Concrete."

3. CONSTRUCTION

Perform the following as shown on the plans:

3.1. **Installation.** Assemble and install crash cushion attenuators in accordance with the details shown on the plans and manufacturer recommendations. Obtain assembly and installation information for the crash cushion attenuators from the manufacturer and provide the Engineer with an installation and repair manual specific to the crash cushion attenuators.

3.2. **Moving and Resetting.** Remove crash cushion attenuators from a stockpile or from an existing location and reset in a new location as shown on the plans or as directed. Install crash cushion attenuators in accordance with pertinent standards and manufacturer recommendations. Provide additional materials to complete the installation as needed. Dispose of unsalvageable materials in accordance with federal, state, and local regulations.

3.3. **Removal.** Remove crash cushion attenuators from an existing location and stockpile in the area designated on the plans, as directed, or dispose. Clean and repair salvageable units before inspection and return them to the Department. Dispose of unsalvageable materials in accordance with federal, state, and local regulations.

4. MEASUREMENT

This Item will be measured by each crash cushion attenuator.

5. PAYMENT

The work performed and the materials furnished in accordance with this Item and measured as provided for under "Measurement" will be paid for at the unit price bid for "Crash Cushion Attenuator (Furnish and Install, Designated Source, Move and Reset, Stockpile, or Remove)" of the category, width (N or W), and test level. This price is full compensation for foundations; materials, stockpiling, moving and removing, hauling, installing and resetting, disposal of unsalvageable materials, equipment, labor, tools, and incidentals.

5.1. **Furnish and Install.** This price is full compensation for furnishing and installing crash cushion attenuator.

5.2. **Designated Source.** This price is full compensation for delivering and installing Department-furnished crash cushion attenuator from a designated source.

- 5.3. **Move and Reset.** This price is full compensation for moving crash cushion attenuator installations on the project from one location to another (including disassembly and reassembly costs), moving crash cushion attenuator from an installation on the project to a temporary storage area (including disassembly costs), and moving crash cushion attenuator from a temporary storage area to an installation site on the project (including assembly costs).
- 5.4. **Stockpile.** This price is full compensation for removing crash cushion attenuator from the project and delivering to the Department stockpile area shown on the plans or as directed.
- 5.5. **Remove.** This price is full compensation for removing crash cushion attenuator from the project and retained by the Contractor.



Item 550

Chain Link Fence

1. DESCRIPTION

Furnish, install, remove, repair, or replace chain link fence and gates.

2. MATERIALS

Furnish certification from the chain link fence materials manufacturer stating that all fencing materials comply with the requirements of this Item before installation of the fence. Use only new materials.

2.1. General. Furnish materials in accordance with the following:

- Item 421, "Hydraulic Cement Concrete," Class B
- Item 445, "Galvanizing"

2.2. Wire Fabric. Provide wire fabric with:

- 9 gauge (0.148 in. diameter) steel wire with a minimum breaking strength of 1,290 lb. meeting ASTM A392 Class I or ASTM A491;
- mesh size of 2 in. \pm 1/8 in. between parallel wires with at least 7 meshes in a vertical dimension of 23 in. along the diagonals of the openings; and
- knuckled selvages at the top and bottom edge of the fabric, unless otherwise shown on the plans.

2.3. Posts. Provide posts of the size and weight shown on the plans. Do not provide rerolled or open-seam posts. Use material for all posts meeting ASTM F1043 Group 1A Regular Grade or Group 1C High Strength.

2.4. Post Caps. Provide malleable iron post caps designed to exclude all moisture. Furnish barbed wire support arms integral with the post caps if barbed wire is shown on the plans. Furnish post caps with an opening for the top rail if top rail is shown on the plans. Post caps must have a 2-in. skirt.

2.5. Gates. Provide gates fabricated from round sections of pipe of the size and weight shown on the plans. Use material for all gate pipes meeting ASTM F1043 Group 1A Regular Grade or Group 1C High Strength. For each gate, include:

- corner and tee fittings of malleable iron or pressed steel with means for attaching diagonal bracing members;
- hinges of malleable iron allowing a full 180° swing, easily operated by one person;
- ball-and-socket-type bottom hinges that do not twist or turn from the action of the gate and prevent the closed gate from being lifted off the hinges;
- a positive stop that prevents any portion of the gate from swinging over an adjacent traffic lane;
- malleable iron pulley systems for roll type gate (only when required);
- diagonal braces consisting of 3/8-in. diameter cable with turnbuckles, 2 to each gate frame, and, for vehicle gates, a vertical pipe brace of the size and weight shown on the plans at the center of each gate leaf;
- latches of malleable iron or steel for single gates with a single-fork latch and padlock eye that will keep the gate closed;
- 2 fork latches mounted on a center plunger rod with a padlock eye for double-leaf gates;
- holdbacks for each leaf of vehicular gates, with a semi-automatic holdback catch anchored at least 12 in. into a 12-in. diameter by 24-in. deep concrete footing; and

- a malleable iron center rest, designed to receive the plunger rod anchored as shown on the plans for all double-leaf gates.
- 2.6. **Top Rail.** Use material meeting ASTM F1043 Group 1A or 1C for all top rail pipes. Provide 1.660 in. OD top rail manufactured from Group 1A standard weight (Schedule 40) steel pipe weighing 2.27 lb. per foot or from Group 1C high-strength pipe weighing 1.84 lb. per foot when shown on the plans. Provide pipe in sections at least 18 ft. long joined with outside steel sleeve couplings at least 6 in. long with a minimum wall thickness of 0.70 in. Use couplings designed to allow for expansion of the top rail.
- 2.7. **Tension Wire.** Use 7 gauge (0.177-in.) carbon steel wire with a minimum breaking strength of 1,950 lb. for the bottom edge of all fence fabric, and for the top edge of fence fabric when a top rail is not specified.
- 2.8. **Truss Bracing.** Provide truss bracing as shown on the plans.
- 2.9. **Cables.** Provide 7-wire strand cables manufactured of galvanized annealed steel at least 3/8 in. in diameter.
- 2.10. **Barbed Wire.** Provide 3 strands of twisted 12.5 gauge barbed wire with 2-point, 14 gauge barbs spaced approximately 5 in. apart conforming to ASTM A121 or ASTM A585 when specified on the plans.
- 2.11. **Barbed Wire Support Arms.** Provide support arms at an angle of 45° from vertical, with clips for attaching 3 strands of barbed wire to each support arm and sufficient strength to support a 200-lb. weight applied at the outer strand when barbed wire is specified on the plans.
- 2.12. **Stretcher Bars.** Provide stretcher bars made of flat steel at least 3/16 × 3/4 in. and not more than 2 in. shorter than the fabric height. Provide one stretcher bar for each gate and end post and 2 stretcher bars for each corner and pull post.
- 2.13. **Grounds.** Provide copper-clad steel rods 8 ft. long with a minimum diameter of 5/8 in., or other UL-listed ground rods.
- 2.14. **Miscellaneous Fittings and Fasteners.** Furnish enough fittings and fasteners to erect all fencing materials in a proper manner. Furnish fittings for posts from pressed or rolled steel, forged steel, malleable iron or wrought iron of good commercial quality spaced as shown on the plans.
- 2.15. **Coatings.** Hot-dip galvanize all materials unless specified otherwise in this Item or on the plans. Fabric, tension wire, and barbed wire may be aluminum-coated or alloy-coated if approved. Additionally coat all material except bolts, nuts, washers, and pipe material with thermally fused polyvinyl chloride (PVC) in accordance with ASTM F668, Class 2b, meeting the specified color when shown on the plans.
- 2.15.1. **Fabric.**
- 2.15.1.1. **Galvanizing.** Hot-dip galvanize in accordance with ASTM A392, Class I.
- 2.15.1.2. **Aluminum Coating.** Aluminum-coat in accordance with ASTM A491.
- 2.15.1.3. **Alloy Coating.** Coat with zinc-5% aluminum-mischmetal alloy (Zn-5A1-MM) in accordance with ASTM F1345, Class I.
- 2.15.2. **Posts, Braces, and Gates.**
- 2.15.2.1. **Standard Weight (Schedule 40) Pipe.** Hot-dip galvanize inside and outside according to ASTM F1043 (1.8 oz./sq. ft. galvanized zinc weight).
- 2.15.2.2. **High Strength Pipe.** Hot-dip galvanize before or after forming pipe according to ASTM F1043 Group 1C and as follows:
 - Outside—minimum 0.9 oz./sq. ft. galvanized zinc weight with a verifiable polymer overcoat.

- Inside—minimum 0.9 oz./sq. ft. galvanized zinc weight before forming, or minimum 0.3 mils zinc-based coating after forming containing a minimum 90% zinc dust, by weight.

- 2.15.2.3. **Optional Additional Coating.** Additionally coat all pipe material with 10 mils minimum thermally fused PVC according to ASTM F1043, meeting the specified color when shown on the plans.
- 2.15.3. **Fittings, Bolts, and Other Miscellaneous Hardware.** Galvanize all fittings, bolts, and miscellaneous hardware in conformance with Item 445, "Galvanizing."
- 2.15.4. **Tension Wire.** Zinc-coat tension wire with a minimum coating of 0.80 oz./sq. ft. or aluminum-coat with a minimum coating of 0.30 oz./sq. ft.
- 2.15.5. **Barbed Wire.** Zinc-coat barbed wire in accordance with ASTM A121 (0.80 oz./sq. ft.) or aluminum-coat in accordance with ASTM A585 (0.30 oz./sq. ft.).
- 2.15.6. **Pull Cable.** Zinc-coat pull cable with a minimum coating of 0.80 oz./sq. ft. of individual-wire surface when tested in conformance with ASTM A116.

3. CONSTRUCTION

Erect the chain link fence to the lines and grades established on the plans. Overall height of the fence when erected is the height above the grade shown.

Repair or replace damaged fence or gates. Remove and replace the post and foundation if posts cannot be repaired by straightening. Return all salvageable material to the location shown on the plans when a fence installation is to be removed in its entirety and not replaced. Backfill all postholes with suitable material. Return the salvaged fence fabric in secured rolls not more than 50 ft. long. Dispose of unsalvageable material.

- 3.1. **Clearing and Grading.** Clear all brush, rocks, and debris necessary for the installation of this fencing.

Stake the locations for corner posts and terminal posts unless otherwise shown on the plans. Follow the finished ground elevations for fencing panels between corner and terminal posts. Level off minor irregularities in the path of the fencing.
- 3.2. **Erection of Posts.** Install posts as shown on the plans. Plumb and permanently position posts with anchorages firmly set before fabric is placed. Brace corner and pull posts as shown on the plans.

- 3.2.1. **Post Spacing.** Space posts as shown in Table 1.

**Table 1
Post Spacing and Placement**

Post Type	Required Spacing or Placement
Line posts	no more than 10 ft. apart
Pull posts	no more than 500 ft. apart and at each change in direction exceeding 20° vertically
Corner posts	at each horizontal angle point

Install cables on all terminal posts and extend to adjacent posts. Install cables on each side of corner and pull posts with a 3/8-in. drop-forged eye-and-eye or eye-and-clevis turnbuckle unless otherwise shown on the plans.

- 3.2.2. **Postholes.** Drill holes for concrete footings for all posts to provide footings of the dimensions shown on the plans.

Penetrate solid rock by at least 12 in. (18 in. for end, corner, gate, and pull posts) or to plan depth where the rock is encountered before reaching plan depth. Drill holes in the solid rock with a diameter at least 1 in. greater than the outside diameter of the post.

Fill the hole in the solid rock with grout consisting of 1 part hydraulic cement and 3 parts clean, well-graded sand after the posts are set and plumbed. If desired, other grouting materials may be used only if approved. Thoroughly work the grout into the hole, leaving no voids. Construct concrete footings from the solid rock to the top of the ground.

- 3.2.3. **Gate Posts.** Align the tops of all gate frames with the fencing top tension wire or top rail. Provide vehicular gates that are greater in overall height than the adjacent fencing by the height necessary to extend to within 2 in. of the pavement between the curbs if curbs are shown on the plans.
- 3.2.4. **Concrete Footings.** Center posts in their footings. Place concrete and compact by tamping or other approved methods. Machine mix all batches of concrete over 1/2 cu. yd. Hand mixing concrete is allowed on batches under 1/2 cu. yd.
- Use forms for footings where the ground cannot be satisfactorily excavated to neat lines. Crown the concrete or grout (for solid rock) to carry water from the post. Keep the forms in place for at least 24 hr. Backfill the footing with moistened material as soon as each form is removed, and thoroughly tamp. Cover concrete with at least 4 in. of loose moist material, free of clods and gravel, immediately after placing concrete. No other curing is required.
- Spread all excess excavated and loose material used for curing neatly and uniformly. Remove excess concrete and other construction debris from the site.
- 3.3. **Erection of Fabric.** Place the fabric with the cables drawn taut with the turnbuckles after all posts have been permanently positioned and anchorages firmly set. Secure one end and apply enough tension to the other end to remove all slack before making attachments. Cut the fabric and independently attach each span at all corner posts and pull posts unless otherwise shown on the plans.
- Follow the finished contour of the site with the bottom edge of fabric located approximately 2 in. above the grade. Grade uneven areas so the maximum distance between the bottom of fabric and ground is 6 in. or less.
- Fasten fabric at 12 in. intervals to the top and bottom tension wires between posts. Fasten the fabric in the same manner when top rail is shown on the plans. Fasten the fabric on gate frames to the top and bottom of the frame at 12 in. intervals. Use steel wire fabric ties of 9 gauge steel or larger. Fasten fabric to terminal posts by steel stretcher bars and stretcher bar bands fitted with carriage bolts and nuts of the size and spacing shown on the plans. Use stretcher bars to fasten end posts, pull posts, corner posts, and gateposts with stretcher bar bands at intervals of no more than 15 in. Attach stretcher bars to terminal posts with 1 × 1/8 in. flat steel bands with 3/8-in. carriage bolts at intervals up to 15 in.
- 3.4. **Electrical Grounds.** Provide at least one electrical ground for each 1,000 ft. of fence, located near the center of the run. Provide additional grounds directly under the point where power lines pass over the fence.
- Vertically drive or drill in the grounding rod until the top of the rod is approximately 6 in. below the top of the ground. Connect a No. 6 solid copper conductor to the rod and to the fence by a UL-listed method so that each element of the fence is grounded.
- 3.5. **Repair of Coatings.** Repair damaged zinc coating in accordance with Section 445.3.5., "Repairs."

4. MEASUREMENT

Chain link fence will be measured by the foot of fence installed, repaired, replaced, or removed, measured at the bottom of the fabric along the centerline of the fence from center to center of posts, excluding gates.

Gates will be measured as each gate installed, repaired, replaced, or removed.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Chain Link Fence (Install)" or "Chain Link Fence (Repair)" of the height specified or "Chain Link Fence (Remove)" and "Gate (Install)" or "Gate (Repair)" of the type, height, and width of opening specified or "Gate (Remove)." Clearing and grading for fencing and gates will not be paid for directly but is subsidiary to this Item.

- 5.1. **Chain Link Fence (Install).** This price is full compensation for furnishing and installing fencing, except gates; cleaning, grading, and backfilling; removing and disposing of surplus material; and equipment, labor, tools, and incidentals.
- 5.2. **Chain Link Fence (Repair).** This price is full compensation for furnishing materials; repairing or replacing fencing, except gates; cleaning, grading, and backfilling; removing and disposing of surplus or damaged material; and equipment, labor, tools, and incidentals.
- 5.3. **Chain Link Fence (Remove).** This price is full compensation for removing all fencing, except gates; cleaning, grading, and backfilling; removing and disposing of surplus material; and equipment, labor, tools, and incidentals.
- 5.4. **Gate (Install).** This price is full compensation for installing gate and for providing materials, center anchorages, equipment, labor, tools, and incidentals.
- 5.5. **Gate (Repair).** This price is full compensation for repairing or replacing gate and for furnishing materials; removing and disposing of damaged materials; and equipment, labor, tools, and incidentals.
- 5.6. **Gate (Remove).** This price is full compensation for removing gate and for materials, equipment, labor, tools, and incidentals.



Item 770

Guard Fence Repair

1. DESCRIPTION

Repair guard fence elements, posts, terminal anchor sections, single guard fence terminals, and other appurtenances.

2. MATERIALS

Furnish the following materials, unless otherwise shown on the plans:

- rail elements, posts, blockouts, fittings, and anchor concrete meeting Item 540, "Metal Beam Guard Fence";
- single guardrail terminal (SGT), in accordance with Item 544, "Guardrail End Treatments";
- steel posts with base plates or terminal anchor posts to match original design, meeting ASTM A36 or better;
- paint as required;
- concrete for structural repair, in accordance with Item 429, "Concrete Structure Repair";
- grout meeting the requirements of Item 421, "Hydraulic Cement Concrete"; and
- backfill material as approved.

Pick up materials furnished by the Department at the locations shown on the plans. Load and deliver furnished material to the project location. Pick up Department-furnished materials during normal business hours.

3. WORK METHODS

Replace guard fence, including thrie beam, curb, and transitions, in accordance with Item 540, "Metal Beam Guard Fence," and as shown on the plans or as directed. Work requests are made on a callout basis. Begin physical work within 72 hr. of notification, unless otherwise shown on the plans. Replace end treatments in accordance with Item 544, "Guardrail End Treatments," and as shown on the plans or as directed. Weld in accordance with Item 448, "Structural Field Welding." Repair concrete in accordance with Item 429, "Concrete Structure Repair." Remove guard fence in accordance with Item 542, "Removing Metal Beam Guard Fence." Replace rail and posts removed during the same workday, unless otherwise approved.

- Protect traffic from exposure to unattached rail elements left overnight, as approved.
- Cover or fill postholes at the end of each day.
- Place rail to a smooth line and grade, with posts plumb to the correct height, in accordance with the plans.
- Remove salvageable rail elements in original lengths. Remove fittings from posts and rail elements. Deliver salvageable materials to a designated stockpile site and neatly stack as directed. Reuse salvageable materials in the repair as approved.
- Dispose of debris and damaged components in accordance with all federal, state, and local regulations.

- 3.1. **Repair of Rail Element.** Remove and replace rail elements as directed. Bolt rail elements end to end and lap in the direction of traffic in the lane adjacent to the guard fence. Provide prefabricated curved rail when needed. Field-drill,

punch, or use other approved methods to create holes for special details. Tighten nuts. Replace bridge end connection when required, in accordance with Item 540, "Metal Beam Guard Fence."

- 3.2. **Removal and Replacement of Timber or Steel Post.** Replace posts as directed. Dispose of any concrete removed. Drill new post holes as needed. Clean postholes free of loose dirt and debris, and thoroughly compact bottom of hole to the correct elevation for placement of post. Place post to the correct alignment, elevation, and plumb. Backfill with select material by thoroughly compacting material to the density of adjacent undisturbed material. Replace concrete foundations only as directed. Use grout to fill space between riprap and posts when replacing posts.
- 3.3. **Realignment of Posts.** Realign existing posts to a smooth line and grade.
- 3.4. **Repair of Terminal Anchor Post.** Repair the steel anchor post by straightening or welding to the existing post above the concrete foundation.
- 3.5. **Replacing Terminal Anchor Posts.** Remove and replace damaged anchor posts with foundation or install new anchor posts with foundation. Remove anchor and clean existing holes or drill new holes, as approved.
- 3.6. **Removal of Guardrail End Treatment and Replacement with SGT.** Remove damaged guard fence end treatment and replace with complete new SGT.
- 3.7. **Repair of SGT.** Remove damaged SGT components and replace with new components. Salvage and reuse components as approved.
- 3.8. **Repair of Steel Post with Base Plate.** Replace damaged steel posts with base plates. Drill anchor holes and install new bolts or weld new anchor bolts to existing bolts as directed. Field-weld in accordance with Item 448, "Structural Field Welding," or shop-weld in accordance with Item 441, "Steel Structures." Repair damaged galvanized coating in accordance with Section 445.3.5., "Repairs."
- 3.9. **Raise Rail Element.** Raise rail as shown on the plans.
- 3.10. **Repair of Blockouts.** Remove and replace damaged or deteriorated blockouts with new blockouts when shown on the plans or as directed.

4. MEASUREMENT

This Item will be measured as follows:

- 4.1. **Repair of Rail Element (W-Beam, Thrie-Beam, or Thrie-Beam Transition to W-Beam).** By the foot along the face of the rail from center to center of the slotted hole at each end of the rail elements repaired, including the terminal anchor section and the rail with any bolt hole spacing, but excluding the first 2 rail elements of the SGT section.
- 4.2. **Removal and Replacement of Timber or Steel Posts without Concrete Foundation.** By each post replaced.
- 4.3. **Removal and Replacement of Timber or Steel Posts with Concrete Foundation.** By each post replaced.
- 4.4. **Realignment of Posts.** By each post realigned.
- 4.5. **Repair of Terminal Anchor Post.** By each post repaired.
- 4.6. **Replacement of Terminal Anchor Posts.** By each post replaced.
- 4.7. **Removal of Guardrail End Treatment and Replacement with SGT.** By each SGT.

- 4.8. **Replacement of SGT Impact Head.** By each head.
- 4.9. **Replacement of SGT Rail.** By the foot from center to center of posts, 2 rails.
- 4.10. **Replacement of SGT Post.** By each post replaced, includes metal sleeves.
- 4.11. **Remove and Replace Blockouts.** By each blockout replaced.
- 4.12. **Repair of Steel Post with Base Plate.** By each post repaired. Includes top or side mount posts.
- 4.13. **Remove and Reset SGT Impact Head.** By each head reset.
- 4.14. **Replace SGT Object Marker.** By each marker replaced, as directed, including the removal and disposal of the existing rubber bumpers.
- 4.15. **Replace SGT Cable Anchor.** By each cable anchor replaced.
- 4.16. **Replace SGT Cable Assembly.** By each cable assembly replaced.
- 4.17. **Replace SGT Strut.** By each strut replaced.
- 4.18. **Raise Rail.** By the foot along the face of the rail from center to center of the slotted hole at each end of the rail element raised.

5. PAYMENT

The work performed and the materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid at the unit price bid for: "Repair Rail Element of the type specified," "Raise Rail of the type specified," "Remove Post of the type specified," "Replace Post of the type specified," "Repair Post of the type specified," "Realign Posts of the type specified," "Remove Guardrail End Treatment and Replace with SGT," "Replace SGT Impact Head," "Remove and Reset SGT Impact Head," "Remove and Replace Blockouts," "Replace SGT Object Marker," "Replace SGT Cable Anchor," "Replace SGT Cable Assembly," and "Replace SGT Strut."

This price is full compensation for repairing rail and furnishing equipment, materials, labor, tools, and incidentals. Realignment of existing rail without removing will not be paid for directly but considered subsidiary to realigning posts. Replacement of concrete riprap around posts, removal and replacement of curbs, and bridge end connection will not be paid for directly but considered subsidiary to the various bid items. Replacement of SGT components not mentioned above will not be paid for directly but considered subsidiary to the various bid items. Concrete repair will be paid for in accordance with pertinent Items. Payment for repair of steel posts with base plate includes work performed above the concrete foundation. Any rail removed and replaced to remove/replace posts will not be paid for directly but considered subsidiary to various bid items.

Coring new holes and furnishing new bolts and epoxy for the repair or replacement of posts with base plate will be considered subsidiary to various bid items.



Item772

Post and Cable Fence

1. **DESCRIPTION**
Install, repair, or remove post and cable fence.

2. **MATERIALS**
Furnish materials as follows, unless otherwise shown on the plans.

2.1. **Posts.** Furnish timber posts meeting DMS-7200, "Timber Posts and Blocks for Metal Beam Guard Fence."

2.2. **Cable.** Furnish wire cable meeting ASTM A475 and the following requirements:
■ 3/8 in. nominal strand diameter,
■ 7-wire strand, common grade,
■ minimum breaking strength of 4,000 lb., and
■ 0.30 oz. per square foot minimum weight of zinc coating.

2.3. **Fittings and Anchors.** Furnish fittings and anchors galvanized in accordance with ASTM A153.

2.4. **Concrete.** Furnish concrete meeting Item 421, "Hydraulic Cement Concrete," of the class shown on the plans.

2.5. **Reflectors.** Furnish reflectors as shown on the plans.

2.6. **Backfill.** Furnish backfill material as approved.

2.7. **Gate.** Furnish gates as shown on the plans.

3. **WORK METHODS**
Install, repair, or remove post and cable fence, including reflectors and related items as shown on the plans.

3.1. **Removal.** Remove concrete anchors, posts, and cable. Backfill and thoroughly compact post and anchor holes. Accept ownership of removed materials, unless otherwise shown on the plans. Dispose of removed materials in accordance with federal, state, and local regulations.

3.2. **Installation.** Place new anchors, posts, and cable as shown on the plans. Set posts on firm foundation and plumb to the required lines and grades. Thoroughly compact backfill in 4-in. layers. Space pull posts as shown on the plans. Lengthen or shorten one pull post space per continuous section if necessary to accommodate site conditions. Cover or fill open holes at the end of each workday.

Maintain current pull post spacing of existing installations if approved. Straighten undamaged posts that are more than 1 in. out of plumb. Stretch cable to remove sag between posts. One cable splice will be allowed between posts, adjacent to the post, but no more than 2 splices in any 100 ft. of cable. Painting is not required, unless otherwise shown on the plans.

- 3.3. **Repair.** Plumb and realign post in a vertical and horizontal position. Stretch cable to remove sag between posts. One cable splice will be allowed between posts, adjacent to the post, but no more than 2 splices in any 100 ft. of cable. Removal and replacement of posts, anchors, or cable will be paid with the appropriate bid item.
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4. MEASUREMENT

This Item will be measured as follows:

- 4.1. **Post and Cable Fence Removal.** By the foot from center to center of pull posts.
- 4.2. **Concrete Anchor Removal.** By each anchor removed.
- 4.3. **New Installation of Post and Cable Fence.** By the foot of fence from center to center of pull posts for each continuous section installed.
- 4.4. **New Concrete Anchor.** By each anchor installed.
- 4.5. **Removal and Replacement of Posts.** By each post removed and replaced.
- 4.6. **Removal and Replacement of Concrete Anchors.** By each anchor removed and replaced.
- 4.7. **Removal and Replacement of Cable.** By the foot of cable removed and replaced.
- 4.8. **New Installation of Post and Cable Fence (Gate).** By each gate installed.
- 4.9. **Repair.** By the foot of fence from center to center of pull posts for each repair.
-

5. PAYMENT

The work performed and the materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Post and Cable Fence (Removal)," "Post and Cable Fence (Remove Concrete Anchor)," "Post and Cable Fence (New Installation)," "Post and Cable Fence (New Concrete Anchor)," "Post and Cable Fence (Remove and Replace Posts)," "Post and Cable Fence (Remove and Replace Concrete Anchors)," or "Post and Cable Fence (Remove and Replace Cable)," "Post and Cable Fence (Gate) (New Installation)," or "Post and Cable Fence (Repair)." This price is full compensation for cable splices, straightening posts, realignments of posts, tightening cable, backfilling posts and anchor holes, installation of reflectors, bollards, foundations, backfilling, gate and hardware, paint, materials, equipment, labor, tools, and incidentals.



Item 774 Attenuator Repair

1. DESCRIPTION

Repair or replace damaged attenuators or crash cushions.

2. MATERIALS

Furnish materials in accordance with details shown on the plans.

3. WORK METHODS

Repair or replace attenuators as approved. Begin physical repair for Contracts with callout work within 72 hr. of notification, unless otherwise shown on the plans. Repair damaged components, such as foundation, concrete, anchors, and pavement, as necessary to ensure the final installation functions as designed. Sweep and clean area around attenuator. Dispose of debris and damaged components in accordance with federal, state, and local regulations. Weld in accordance with Item 448, "Structural Field Welding," as directed or approved. Salvage materials as directed.

3.1. **Removal and Replacement.** Remove existing attenuator and replace with a system shown on the plans or as directed.

3.2. **Repair.** Remove and replace damaged elements of attenuators and repair to meet the installation requirements of the system shown on the plans and the specifications that pertain to that appropriate system.

4. MEASUREMENT

4.1. **Removal and Replacement.** When replacing a complete unit, measurement will be by each unit.

4.2. **Repair.** Repair will be measured by the each for the component specified or by the foot.

5. PAYMENT

The work performed and the materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Remove and Replace" or "Repair" of the type or component specified. This price is full compensation for repairing or replacing attenuators; furnishing materials; salvage and disposal; and equipment, labor, tools, and incidentals.



Item 776

Metal Rail Repair

1. DESCRIPTION

Repair metal traffic or pedestrian rail. Replace metal traffic or pedestrian rail if beyond repair as determined by the Engineer.

2. MATERIALS

Furnish materials in accordance with Item 450, "Railing," and details shown on the plans.

3. WORK METHODS

Remove damaged steel or aluminum rail and repair to match the original or details shown on the plans. Replace steel or aluminum rail to match the original or details shown on the plans if the damaged rail is beyond repair as determined by the Engineer. Begin physical repair for Contracts with callout work within 72 hr. of notification, unless otherwise shown on the plans. Repair damaged components, anchors, etc., as necessary to ensure the final installation functions as originally constructed. Drill anchor holes and install new bolts or weld new anchor bolts to existing bolts as directed. Weld in accordance with Item 441, "Steel Structures," or Item 448, "Structural Field Welding." Repair damaged galvanized coating in accordance with Section 445.3.5., "Repairs." Paint repaired areas of painted rail to match existing color, in accordance with Item 446, "Field Cleaning and Painting Steel." Repair railing removed for repair during the same workday unless otherwise approved. Deliver salvageable materials to a designated stockpile site and dispose of debris and damaged components in accordance with federal, state, and local regulations.

4. MEASUREMENT

Rail repair will be measured by the foot between centers of the first undamaged post on each side of the repair or to the end of the rail. Repairing metal post with base plate will be measured by each post repaired. Rail replacement will be measured by the foot between centers of the first undamaged post on each side of the replacement or to the end of the rail.

5. PAYMENT

The work performed and materials furnished in accordance with this Item and measured as provided under "Measurement" will be paid for at the unit price bid for "Repair" of the type specified, "Repair Metal Post with Base Plate" of the type specified, and "Replacement" of the type specified. This price is full compensation for removing and repairing rail; salvage and disposal; and materials, tools, equipment, labor, and incidentals. Concrete repair will be paid for in accordance with Item 429, "Concrete Structure Repair."

INDEX OF SHEETS

SHEET NO.	DESCRIPTION	SHEET NO.	DESCRIPTION
<u>ATTACHMENT SHEETS</u>			
9-14	ATTACHMENT A	68	TAU-II-R(N)- 16
15	ATTACHMENT B	69	TAU-II-R(W)- 16
 <u>DETAIL SHEETS</u>			
40	GF (31)-14		
41	GF (31)DAT-14		
42	GF (31)LS-14		
43	GF (31)TR-14		
44	GF (31)TL2-11		
45	GF (31)T101-13		
46	GF (31)MS-11	70-75	<u>TRAFFIC CONTROL PLAN</u> TCP (1-1)-12 THRU (1-6)-12
47	SGT (8)31-14	76-83	TCP (2-1)-12 THRU (2-8)-12
48	SGT (8S)31-14	84-85	TCP (3-1)-13 THRU (3-2)-13
49	SGT (9S)31-14	86	TCP (3-3)-14
50	SGT (10S)31-16	87	TCP (3-4)-13
51	CATGR(2)- 17	88	TCP (5-1)-12
52	CATGR(2)- 17	89-95	TCP (6-1)-12 THRU (6-7)-12
53	CATCB(1)- 17	96	TCP (7-1)-13
54	CATCB(1)- 17	97	RS-TCP-05
55	BED-14		
56	REACT(N)- 16		
57	REACT(W)- 16		
58	PCF-05		
59	QUAD(N)- 17		
60	QUAD(W)- 17		
61	QGELITE(N)- 17		
62	QGELITE(W)- 17		
63	TRACC(N)- 16		
64	TRACC(W)- 16		
65	SSCC- 16		
66	TAU-II(N)- 16		
67	TAU-II(W)- 16		

The Standard Sheets specifically identified above have been selected by me or under my responsible supervision as being applicable to this project.

Isaac Garza, P.E.
Transportation Engineer

Date

DISCLAIMER
The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT maintains no responsibility for the use of this standard for any purpose or for incorrect results or damages resulting from its use.

GENERAL NOTES

- The type of post (round wood post, rectangular wood post, or steel post) will be as shown in the plans. The exact position of MBGF shall be shown in the plans or as directed by the Engineer. Steel posts to be galvanized in accordance with Item 445, Galvanizing.
- Roll element shall meet the requirements of Item 546, Metal Beam Guard Fence except as modified in the plans. The Contractor may furnish roll elements of 12" x 1 1/2" x 1/8" (ASTM A583) or 12" x 1 1/2" x 1/8" (ASTM A583) with a 3/16" x 1/2" x 1/8" (ASTM A583) angle. A special length of roll may be manufactured to accommodate the downstream and/or terminal (DAT) and the transition sections of guardrail.
- Buttress head "post" bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the nut (ASTM A563) and Type A (1 1/2" x 0.0 washer and not more than 1" beyond it. Buttress head "splice" bolts (ASTM A307) are 3/4" x 1 1/2" long at triple roll splices with a 3/8" double recessed nut (ASTM A563). Hard beam connection bolts shall be 1/2" x 3/4" x 3/8" and shall have a length to extend through the full thickness of the roll, washers, and nuts.
- Fittings, bolts, nuts, and washers shall be galvanized in accordance with Item 445, Galvanizing. Fittings shall be satisfactory to the bid firm.
- Crown shall be allowed to accommodate the Metal Beam Guard Fence.
- The lateral approach to the guard fence, shall have a maximum slope of 1:10. If shown elsewhere in the plans or as directed by the Engineer, the guard fence may be flared at a rate of 25:1 or flatter.
- Unless otherwise shown in the plans, guard fence placed in the vicinity of curves shall be positioned so that the face of curb is located directly below or below the face of the roll. Roll placed over curb shall be installed so that the post bolt is located approximately 25 inches above the gutter on or edge of shoulder.
- If solid rock is encountered within 0 to 18" of the finished grade, drill a 2" dia. hole, or drill two 1 1/2" dia. holes, from back over the hole, 24" into the rock. If solid rock is encountered below 18", drill a 12" dia. hole, 12" into the rock or to the standard embedment depth, whichever is greater. Any excess post length, after meeting these requirements, shall be cut off to ensure proper guardrail mounting height. Backfill with a compacted fill material.
- Posts shall not be set in concrete, or any depth.
- Special fabrication will be required at installations having a curvature of less than 150 ft. radius.
- Unless otherwise shown in the plans, a composite material post and/or block for the Metal Beam Guard Fence may be substituted for posts and/or blocks of similar dimensions. The Construction Division, TxDOT maintains a Material Producer List (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL may furnish composite material posts and/or blocks.
- For posts located partially or wholly between precast box culvert units, the use of a cast-in-place concrete closure between boxes is required. See Detail "A" on Bridge Standard 50-80.

WOOD BLOCK TO ROUND WOOD POST
Wood block may require plastic emulsion to prevent guardrail from slipping.

WOOD BLOCK TO RECTANGULAR WOOD POST
Wood block may require plastic emulsion to prevent guardrail from slipping.

WOOD BLOCK TO STEEL POST
Steel Post to Connection to Roll Element is less than 1/2" from center of post.

LOW FILL CULVERT POST
Culverts of 25 ft. or less, see detail for "Long Span" action.

ELEVATION MID-SPAN RAIL SPLICE
Showing a 25'-0" section of W-beam rail, 12"-6" roll sections may also be applied (See General Note 2)

THREE-BEAM TERMINAL CONNECTION
(See General Notes 3 & 4 for required hardware)

NON-SYMMETRICAL TRANSITION TO W-BEAM (10 GAUGE)

BUTTON HEAD BOLT
Post and Splice Bolts (See General Note 3)

RAIL SPLICE DETAIL
Notes: 1. Mid-span rail splices are required with 6'-3" post spacing.

MID-SPAN RAIL SPLICE DETAIL
Notes: 1. Mid-span rail splices are required with 6'-3" post spacing.

DOWNSTREAM RAIL ATTACHMENT
Notes: 1. Rail elements shall be lapped in the direction of adjacent traffic.

METAL BEAM GUARD FENCE GF (31) - 14

Texas Department of Transportation
Design Standards

FILE NO.	6314-60-001	REV.	01	DATE	08/11/01
PROJECT	STATE HIGHWAY 281	CONTRACT	01	SECTION	01
DATE	08/11/01	BY	01	CHKD	01
SCALE		DATE		BY	

GENERAL NOTES

- The detail shown is the minimum length of steel (LON) for a DAT connected to a concrete rail.
- The rail section at the end post is supported by the post. The rail element is not attached to the end post.
- The foundation tubes shall not project more than 3/4" above the finished grade.
- All hardware for DAT shall be ASTM A307 unless otherwise shown.
- Refer to GF(31) sheet for terminal connection details.

LOW STRIP INSTALLATION

If a low strip is required with the DAT installation the leave-out area around the steel foundation tubes and the low channel shall be filled with concrete. This requires a full pour of the foundation tubes.

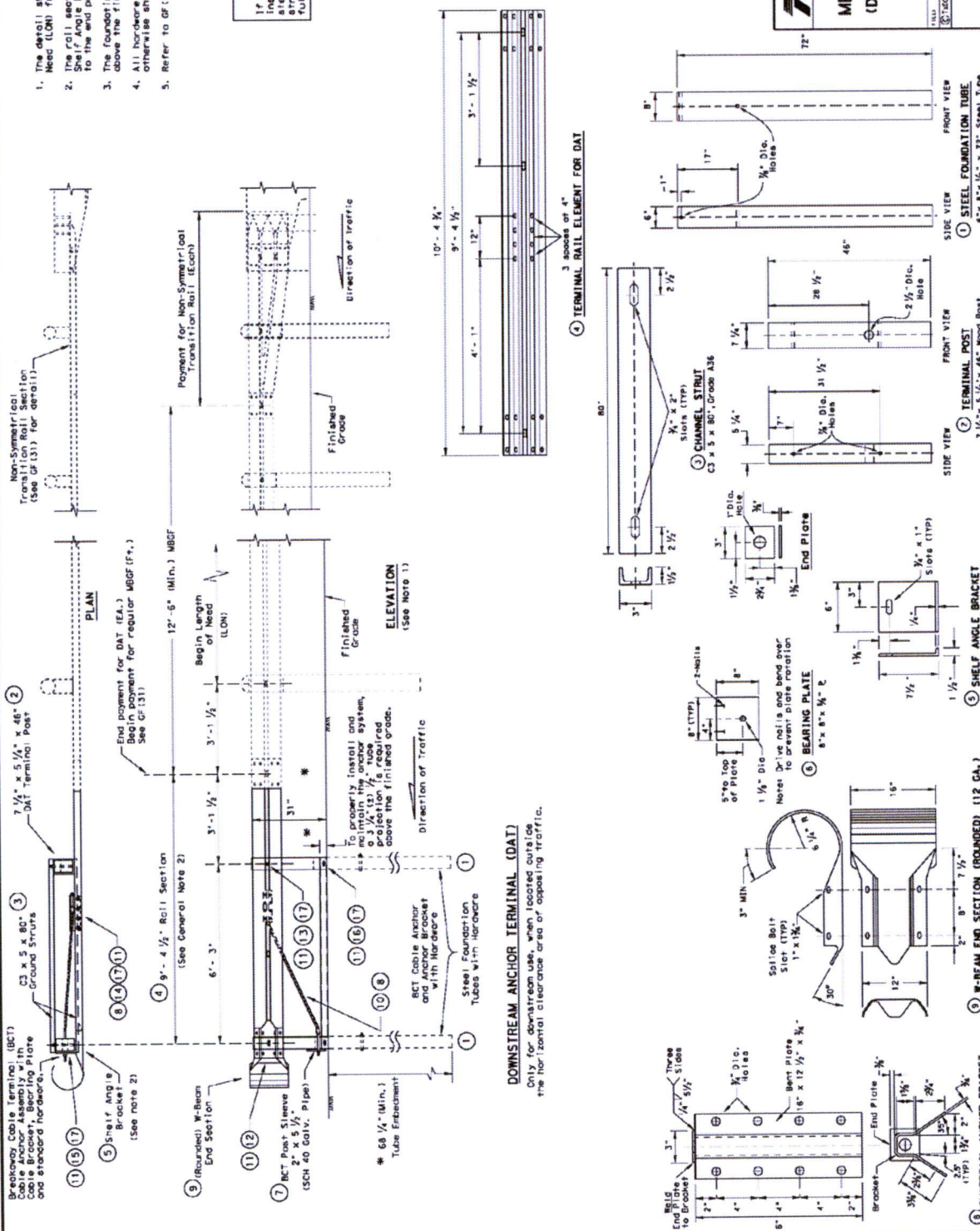
#	(DAT) PARTS LIST	QTY
1	Steel Foundation Tube	2
2	DAT Terminal Post	2
3	Channel Strut	2
4	Terminal Rail Element	1
5	Shelf Angle Bracket	1
6	BCT Bearing Plate	1
7	BCT Post Sleeve	1
8	Guardrail Anchor Bracket	1
9	Roundhead W-Beam End Section	1
10	BCT Cable Anchor	1
11	Recessed Nut, (Guardrail)	20
12	1 1/4" Button Head Bolt	4
13	10" Hex Head Bolt	2
14	1/2" x 2" Hex Head Bolt	8
15	1/2" x 8" Hex Head Bolt	4
16	1/2" x 10" Hex Head Bolt	2
17	1/2" Flat Washer	18

Texas Department of Transportation
Quality Division
Standard

**METAL BEAM GUARD FENCE
(Downstream Anchor Terminal)**

GF (31) DAT-14

DATE: 07/2007
DRAWN BY: J. B. B. (10/10/07)
CHECKED BY: J. B. B. (10/10/07)
SCALE: AS SHOWN



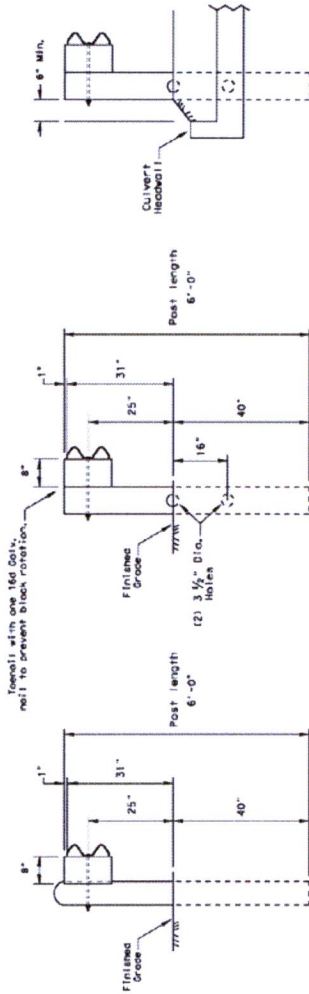
DOWNSTREAM ANCHOR TERMINAL (DAT)
Only for downstream use, when located outside the horizontal clearance area of opposing traffic.

DISCLAIMER: This standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the accuracy of this standard or other formats or for incorrect results or for incorrect use of the standard. The user of this standard shall be responsible for the accuracy of the information used in the design and construction of any project.

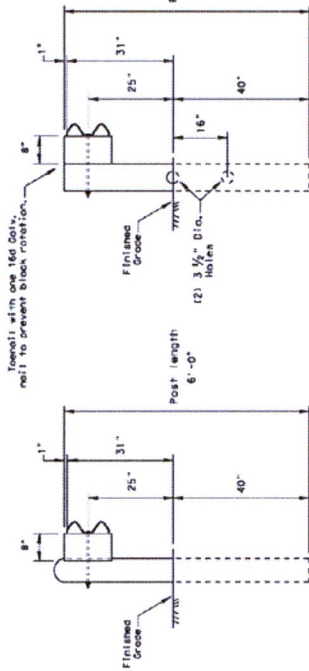
GENERAL NOTES

1. The type of line post, round wood post, rectangular wood post, or steel post will be as shown in the plans. The exact position of the transitions shall be as shown in the plans. The exact position of the transitions shall be as shown in accordance with Item 445, "Galvanizing". Steel posts to be galvanized in accordance with Item 445, "Galvanizing".
2. Rail strength shall meet all requirements of Item 540, "Metal Beam Guard Fence" except as specified on this plan. The contractor may furnish rail elements of 12 1/2" or 28 four nominal lengths.
3. Rail post holes are offset 3" - 1 1/2" from standard guardrail to accommodate the midspan splicing.
4. Button head post bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the rail (ASTM A553) and no more than 3/4" beyond it. Buttom head bolts (ASTM A307) are 3/4" x 1 1/2" with a 3/4" double recessed end. The bolt shall be galvanized in accordance with Item 445, "Galvanizing". Fittings shall be subsidiary to the big item requiring construction of transition.
5. Where solid rock is encountered or where shown on the plans, the diameter of the holes shall be approximately 12 inches, the backfilling shall be with a cohesionless material, and embedment depth shall be 1' - 6" or more as directed by the Engineer.
6. Posts shall not be set in concrete, or any depth.
7. Refer to GF(31) Standard Sheet for additional details.

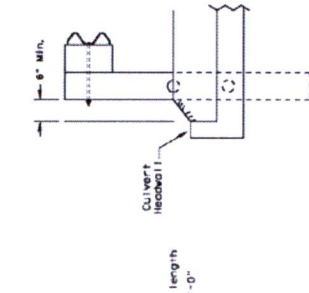
**Rectangular CRT Post
(6" x 8" x 6' Long)**
(6) CRT Requires
See Elevation Detail for locations.



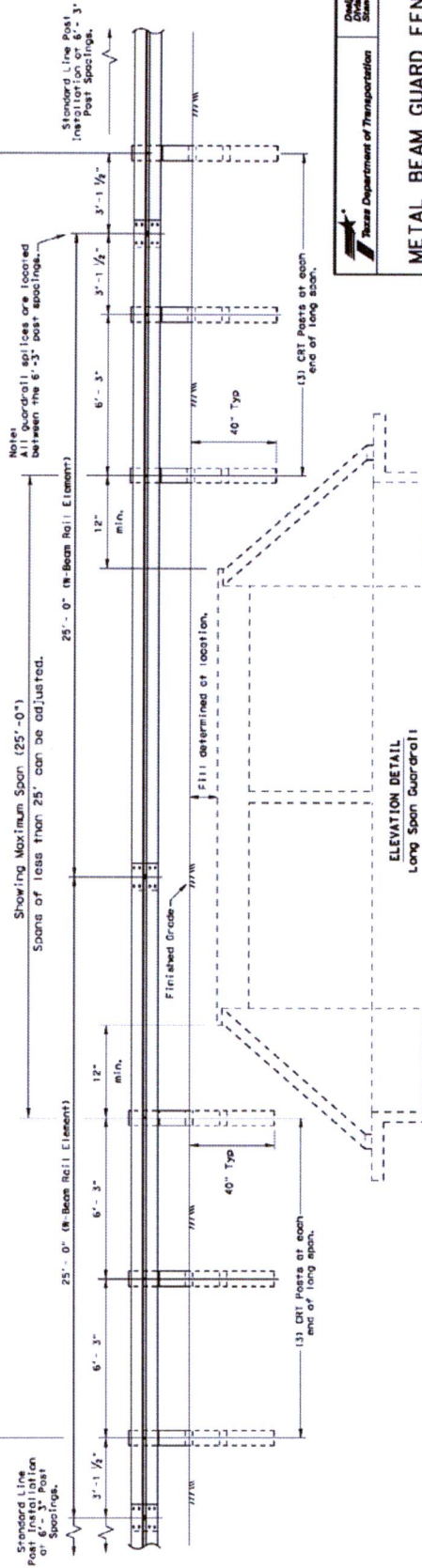
Standard Line Post Installation



**Lateral Offset Between the
Guardrail and the Culvert Headwall**

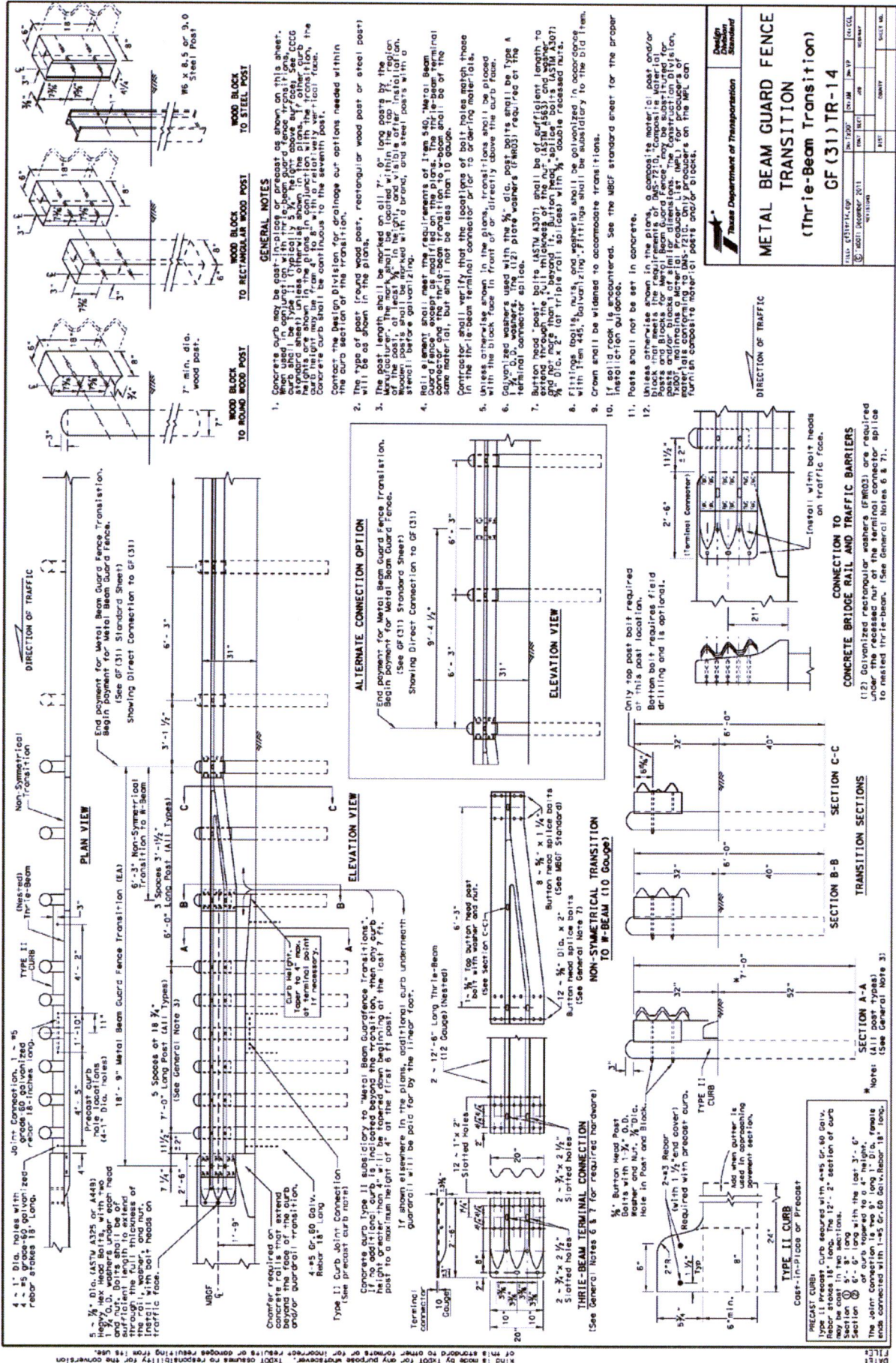


**GF(31) - Long Span System
50'-0" (Max)**



**METAL BEAM GUARD FENCE
(Long Span)**
GF(31)LS-14

DATE	BY	CHECKED	IN CHARGE
10/11/01	10/11/01	10/11/01	10/11/01
10/11/01	10/11/01	10/11/01	10/11/01
10/11/01	10/11/01	10/11/01	10/11/01



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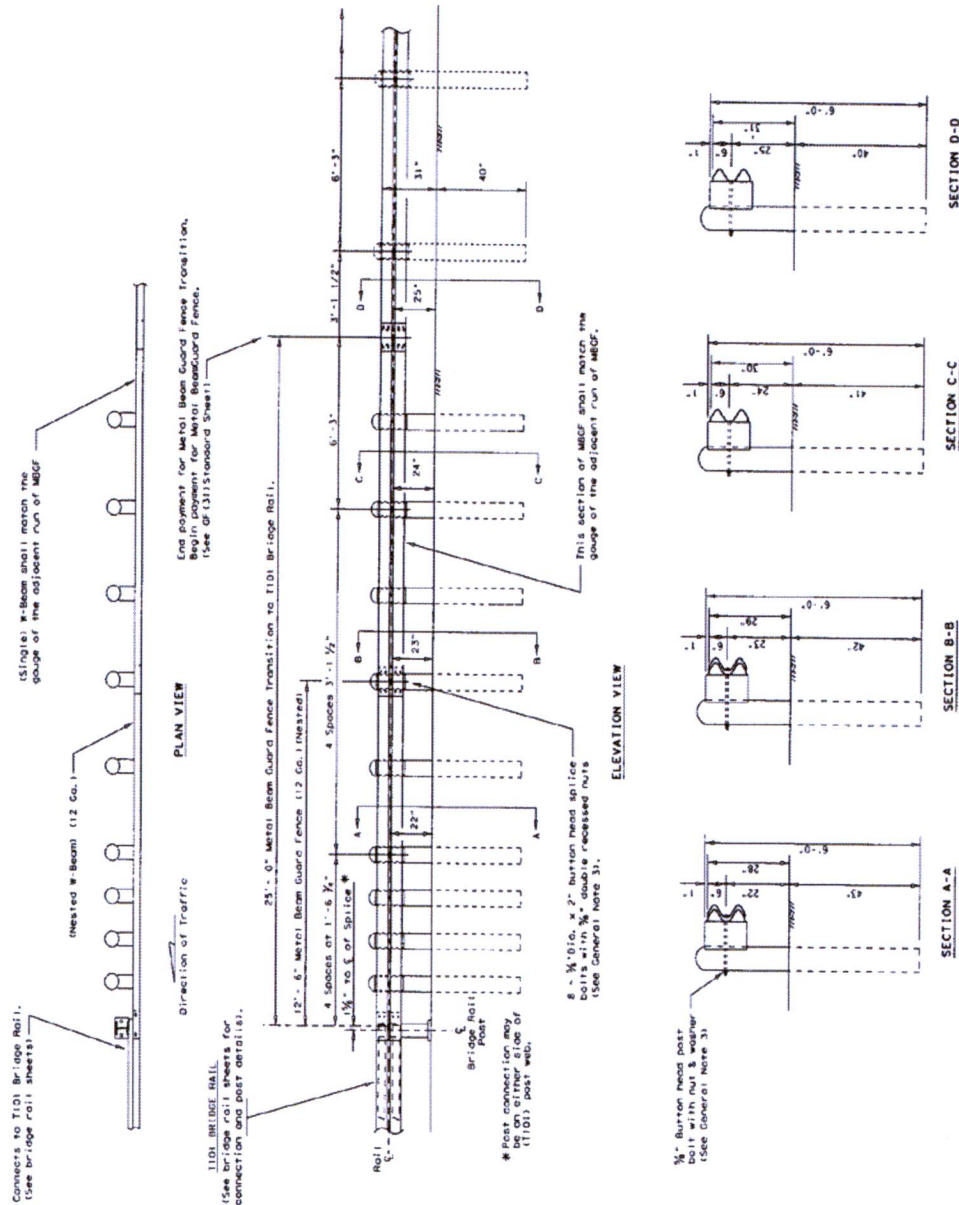
GENERAL NOTES

- Concrete curb may be cast in place or precast as shown on this sheet. Curb shall be Type II (Typically 5' x 12" x 12" curb) above curb face. See (CCC standard sheet) unless otherwise shown in the plans. If other curb height may be used, it shall be with a relative vertical face. The concrete curb shall be continuous to the seventh post.
- Contact the Design Division for drainage cut options needed within the curb section of the transition.
- The type of post (round wood post, rectangular wood post or steel post) shall be specified on the plans.
- Manufacturer's instructions shall be followed for all 7' x 6" long posts by the post. If less than 7' x 6" in height and visible after installation, on steel, before galvanizing.
- Reinforcement shall meet the requirements of Item 510, "Metal Beam Guard Fence", except as modified on the plans. The thrie-beam terminal shall be of the same material, but shall not be less than 10 gauge.
- Contractor shall verify that the locations of bolt holes match those in the thrie-beam terminal connector or to ordering material.
- Unless otherwise shown in the plans, transitions shall be placed with the black face in front of or directly above the curb face.
- Galvanized washers used with the 3/8" dia. post bolts shall be Type A terminal washers, as defined in (12) plate washers (FHW03), required on the thrie-beam terminal connector.
- Thrie-beam terminal connector shall be of sufficient length to extend through the full thickness of the curb. The thrie-beam terminal shall be 1/2" dia. x 2" (for triple roll splices) with 1/2" double recessed nuts, with (12) 3/8" dia. bolts and (12) plate washers. The bolts shall be galvanized in accordance with (Item 510, "Metal Beam Guard Fence").
- Crown shall be widened to accommodate transitions.
- If solid rock is encountered, see the M&T standard sheet for the proper installation guideline.
- Posts shall not be set in concrete.
- Unless otherwise shown in the plans, a composite material post and/or Posts and Blocks for Metal Beam Guard Fence may be substituted for posts and blocks of steel or aluminum. The Construction Division will provide materials conforming to MS-7212. Only products on the M&T can furnish composite material posts and/or blocks.

Texas Department of Transportation		Division	Standard
METAL BEAM GUARD FENCE TRANSITION (Thrie-Beam Transition) GF(31)TR-14		DATE	NOV 19 2011
SCALE	AS SHOWN	DATE	NOV 19 2011
REV	000001	BY	MM
DATE	11/15/11	CHK	MM
APP	MM	DATE	11/15/11
SCALE	AS SHOWN	DATE	11/15/11

GENERAL NOTES

- The type of post (round wood post, rectangular wood post, or steel post) will be shown elsewhere in the plans. The location and position of transitions shall be shown elsewhere in the plans or as directed by the Engineer.
- Material element shall meet the requirements of Item 540, "Metal Beam Guard Fence" except as modified in the plans.
- Buttress head "post" bolts (ASTM A307) shall be of sufficient length to extend through the thickness of the rail (ASTM A553) and the angle. The length of the bolts shall be 1" beyond it. Buttress head "splice" bolts (ASTM A307) are $\frac{3}{8}$ " x 2" (or triple rail splices) with a $\frac{3}{8}$ " double recessed nuts (ASTM A553).
- Fittings (bolts, nuts, and washers) shall be galvanized steel. The steel shall be galvanized in accordance with the bid item requiring construction to be substitution.
- Crown will be altered to accommodate transitions.
- If splice rack is encountered, see the GF (31) standard sheet for proper installation guidance.
- Posts shall not be set in concrete.
- Unless otherwise shown in the plans, a composite material post and/or block that meets the requirements of DMS-7210, "Composite Material Posts and Blocks for Metal Beam Guard Fence" shall be used. The construction division or divisions of similar material producer list (MPL) for producers of materials conforming to DMS-7210. Only producers on the MPL can furnish composite material posts and/or blocks.
- Refer to GF (31) and TYPE T101 Standard Sheet for additional details.



Texas Department of Transportation
Design Standards

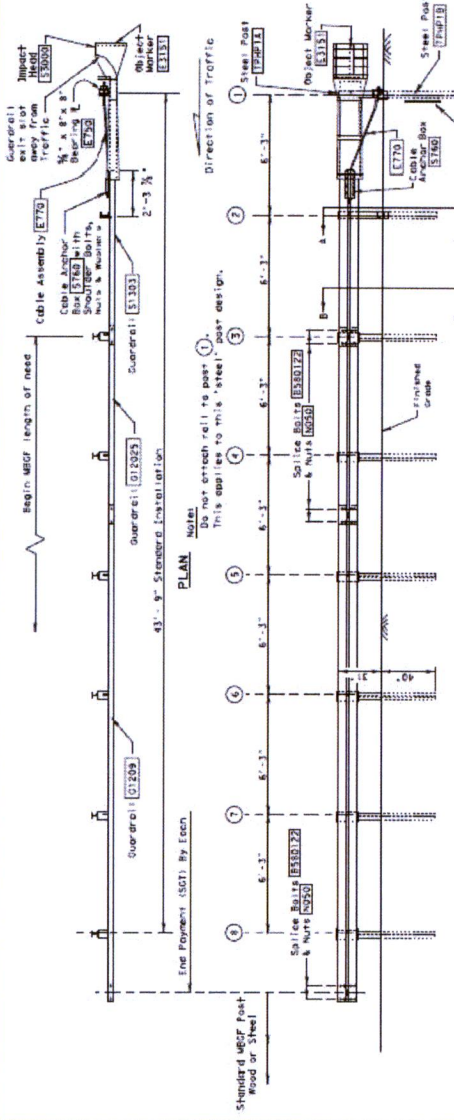
METAL BEAM GUARD FENCE TRANSITION (T101)

GF (31) T101-13

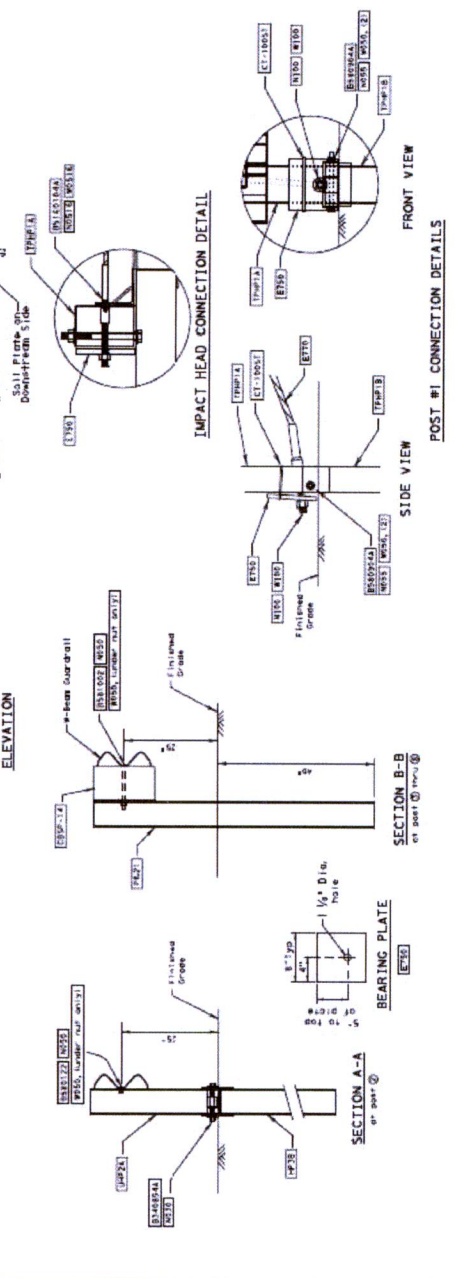
DATE: 03/19/2013	BY: JAC	CHK: JAC	APP: JAC
PROJECT: EXISTING	DATE: 03/19/2013	DATE: 03/19/2013	DATE: 03/19/2013
NO. 1	NO. 2	NO. 3	NO. 4

GENERAL NOTES

- For additional information contact Interstate Steel, Inc., 1432 283-3726.
- All bolts, nuts cable assemblies, steel anchors, steel plates and bearing plates shall be galvanized.
- SGT's placed within the "minimum" 150 ft. radius, shall be installed as straight. Standard rail elements may be installed within the radius without fabricating.
- A flare rate of 2% may be used to prevent the terminal head from encroaching on the engineer. The flare may be decreased or eliminated for specific installations, if directed by the Engineer.
- The lower sections of the post shall not protrude more than 4 inches above finished ground.
- Site grading may be necessary to meet this requirement.
- The lower section of the steel posts should not be driven with the upper post attached. If the post is to be driven in a drilled hole, the additional material must be satisfactorily connected to prevent settlement.
- If solid rock is encountered, see manufacturer's installation manual for the proper installation guidance.
- The precast cable assembly must be cut, a locking device (like a pin or shims) lock pillar should be used to prevent the cable from twisting when tightening the nuts.
- Hinge bolts will not be set below finished grade. At each location the posts shall be installed at the proper grade elevation behind the curb. The posts will then receive field drilling new holes to accommodate the rail to post connection bolts to maintain the proper height of the rail above the guard post. The excess post length above the rail will be removed as directed by the Engineer.
- An object marker shall be installed on the front of the impact head as detailed on 03/01/01A.



ITEM NO.	QTY	BILL OF MATERIALS
U1333	1	GUARDRAIL 12 GAL 12' - 6\"
U1293	1	GUARDRAIL 12 GAL 3' - 6\"
U1299	1	GUARDRAIL 12 GAL 25' - 0\"
U1294	1	FIRST POST ASSEMBLY TOP, TUBE
U1295	1	FIRST POST ASSEMBLY BOTTOM, 6\" - 0\"
U1296	1	SECOND POST ASSEMBLY TOP
U1297	1	SECOND POST ASSEMBLY BOTTOM, 3\" - 5 1/2\"
U1298	1	STANDARD STEEL LINE POST 6\" - 0\" POST 3 THRU 8\"
U1299	1	BEARING PLATE
U1300	1	CABLE ANCHOR BOX
U1301	1	POST CABLE ANCHOR ASSEMBLY
U1302	1	CABLE TILE - STEEL
U1303	1	IMPACT HEAD
U1304	1	IMPACT HEAD
U1305	1	IMPACT HEAD
U1306	1	IMPACT HEAD
U1307	1	IMPACT HEAD
U1308	1	IMPACT HEAD
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U1399	1	IMPACT HEAD
U1400	1	IMPACT HEAD

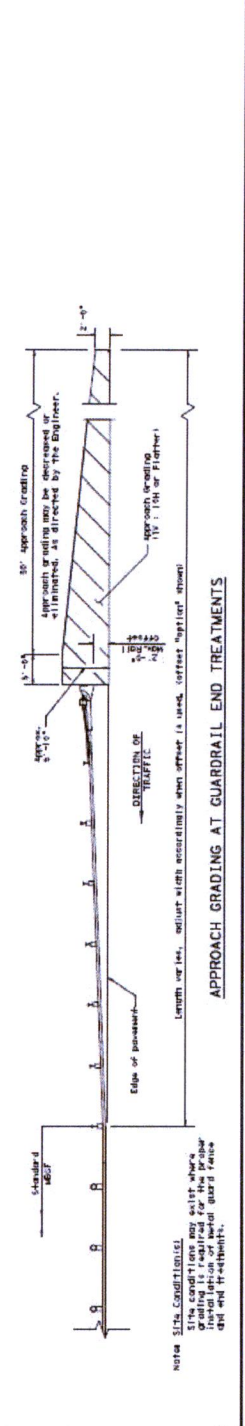


Texas Department of Transportation
Design Division Standards

SINGLE GUARDRAIL TERMINAL (SKT-31) (STEEL POST) SGT (S) 31-14

DATE: December 2011
REV: 01/11/11

DESIGNER: []
CHECKER: []
DATE: []
SCALE: []



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GENERAL NOTES

- For specific information regarding installation and technical assistance of the system, contact Trinity Highway, Chicago, IL 60602 at (888)323-6374, 70 W. Madison St., Suite 2330, Chicago, IL 60602
- Crown will be widened to accommodate the CAT system. The crown should extend at least 3 feet beyond the inside face of rail. The ground line at posts should be an extension of the roadway surface crown.
- All bolts, nuts, washers, cable assemblies, cable anchors, post tubes, backup plates, and soil plates shall be galvanized.
- The exposed end segment of an End Section should be evaluated as a potential obstacle in the determination of the need of MUD for the opposing direction of traffic.
- For placement of curb sections, the height from gutter pan to post base will be 21", and the front section shall be flared (See Detail 2).
- The wood backlogs shall be "use nailed" to the rectangular wood posts to prevent them from turning when the wood drifts.
- Either 6" or 5 1/2" x 7 1/2" wood blocks may be used at posts.
- If a "single sided" transition section is required for the attachment to a rigid concrete rail, see the MUD transition standards for the proper installation.
- Object markers shall be installed on the front of the terminal as detailed on the DDMVIA.

CATED FRONT SECTION
(POSTS 1 THRU 6)

BILL OF MATERIAL

Mfr. Code	QTY	DESCRIPTION
9830	2	1/2" x 1/2" x 110 Gal
3105	2	5/8" x 1/2" x 110 Gal
3105	2	5/8" x 1/2" x 110 Gal
1304	2	1/2" x 1/2" x 110 Gal
9852A	2	Channel, Street, 6" x 6"
2405	6	Steel, Foundation Tube
7665	6	Soil Plate 18" x 24"
30798	1	Wood Post 5 1/2" x 7 1/2" (Notched)
30745	3	Wood Post 5 1/2" x 7 1/2" (Notched)
3105	2	5/8" x 1/2" x 110 Gal
3105	2	5/8" x 1/2" x 110 Gal
3105	2	5/8" x 1/2" x 110 Gal
9916A	1	Soil Plate (Post 1)
9913A	2	Steel Tube (Posts 4 & 6)
92716	1	1/2" x 1/2" x 110 Gal
3095	2	1/2" x 1/2" x 110 Gal
32916	2	1/2" x 1/2" x 110 Gal
30745	2	Wood Post 5 1/2" x 7 1/2" (Notched)
3235	2	1/2" x 1/2" x 110 Gal
19259C	12	Plate Washer (Posts 4 & 6)

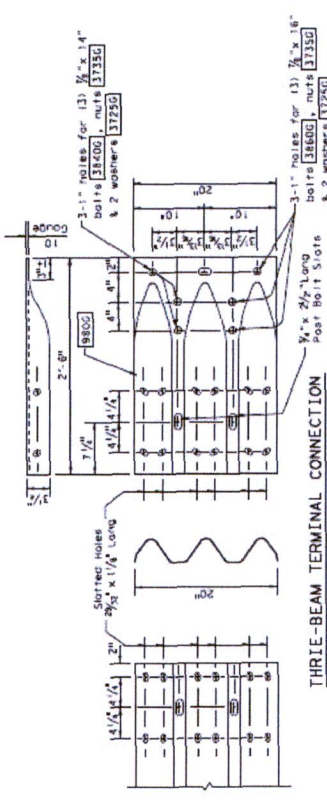
HARDWARE

32630	4	1/2" x 2" LQ Lock Screw
42520	8	1/2" Hex Nut
42580	4	1/2" Lock Washer
42510	4	1/2" Flat Washer
33855	2	Rectangular Washer
33855	2	Rectangular Washer
44605	2	1/2" x 2 1/4" LQ Hex Bolt
34780	13	1/2" x 2 1/4" LQ H.H. Bolt
31800	8	1/2" x 1 1/2" LQ H.H. Bolt
31800	16	1/2" x 1 1/2" LQ H.H. Bolt
31400	85	1/2" x 1 1/2" H.G.S. Nut
33000	8	1/2" Flat Washer
34976	6	1/2" x 3/2" LQ H.H. Bolt
33100	4	1/2" Hex Nut
33000	2	1/2" Flat Washer

CATCH TRANSITION SECTION
(POST 9 THRU END SHOE)

Mfr. Code	QTY	DESCRIPTION
2110	4	1/2" x 1/2" x 110 Gal
9740	2	Trans panel 6' x 12 Gal
9805	2	Special 3/4" beam end shoe
30788	3	Wood Post 6" x 6" x 6" (Post 11 & 12)
33200	30	1/2" x 1/2" x 110 Gal
33200	30	1/2" x 1/2" x 110 Gal
34000	52	1/2" x 2 1/4" Soil Plate Bolt
34088	2	22 1/2" Block 6" x 3 1/2" (Post 12)
34088	2	22 1/2" Block 6" x 3 1/2" (Post 11)
34088	2	22 1/2" Block 6" x 3 1/2" (Post 10)
34088	2	22 1/2" Block 6" x 3 1/2" (Post 9)
34325	1	Wood Post 6" x 6" x 6" (Post 9)
33600	2	1/2" x 1 1/2" Bolt
34005	3	1/2" x 3 1/2" Expansion Bolt w/Washer
34005	3	1/2" x 3 1/2" Expansion Bolt w/Washer
34005	2	1/2" x 2 1/4" Post Bolt (Post 11)
34005	2	1/2" x 2 1/4" Post Bolt (Post 10)
34005	2	1/2" x 2 1/4" Post Bolt (Post 9)
37230	12	1/2" Washer (End Shoe Bolts)
37230	6	1/2" Hex Nut (End Shoe Bolts)
38400	3	1/2" x 1 1/2" Hex Bolt (End Shoe)
38400	3	1/2" x 1 1/2" Hex Bolt (End Shoe)
9806A	2	Spacer Bracket
31778	2	Object Marker 18" x 18" (Cut to fit)
		Optional hardware for Single Sided Barrier-42*
36400	2	1/2" x 24" Bolt
48950	6	1/2" x 24" Hex Bolt (End Shoe)

* Expansion or through bolts may be used with additional bracket installation.



Texas Department of Transportation
Division Standard
TRINITY HIGHWAY ENERGY ABSORPTION CRASH CUSHION (CONCRETE BARRIER)
CATCB(1) - 17

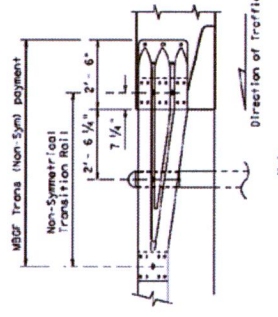
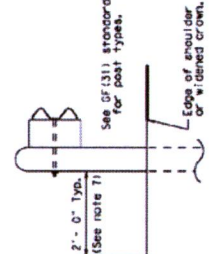
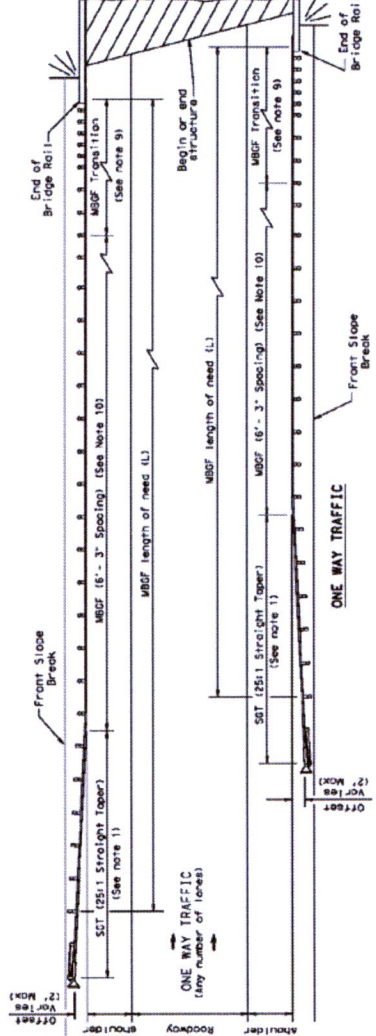
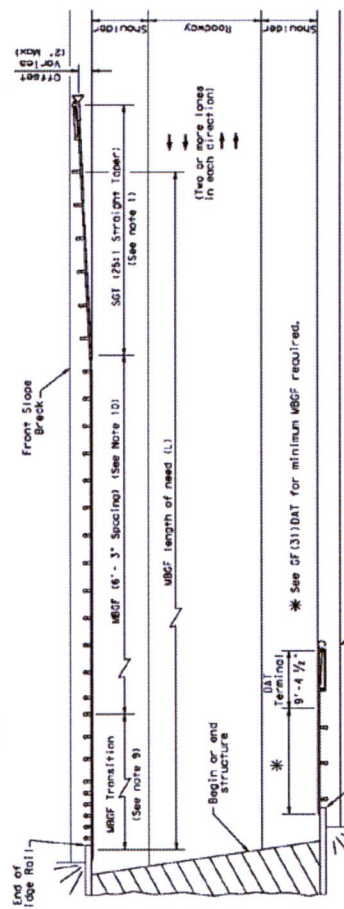
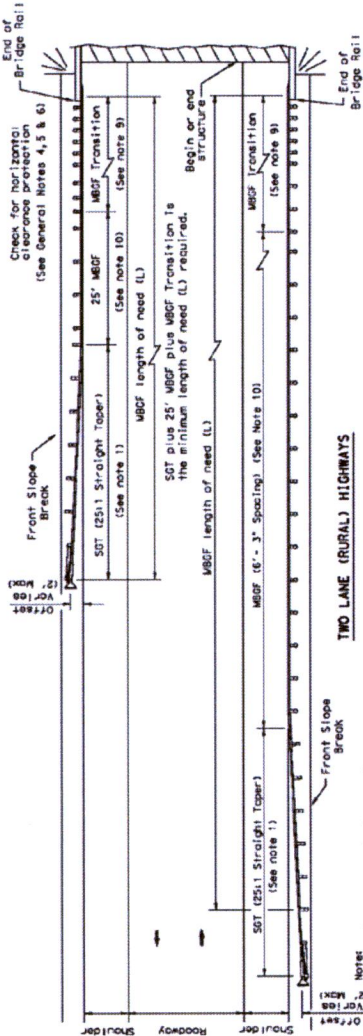
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08/17/00	01	JLB	JLB
08/17/00	01	JLB	JLB
08/17/00	01	JLB	JLB

SACRIFICIAL

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GENERAL NOTES

1. For more details: See GF(31), SOT(33), GF(31)TR, and GF(31)TL standard sheets.
2. Quantities of metal beam guard fence (MBGF) at individual bridge ends are as shown in the plans.
3. Use average daily traffic (ADT) for the current year to determine MBGF length of need in accordance with the Roadway Design Manual unless otherwise specified. For ADT values, refer to the Roadway Design Manual, Volume 10-150 ADT Highway, use length determinations for the higher volume category.
4. MBGF may not be required to abut abutments and end of bridge unless other abutments within the horizontal clearance limits or opposing traffic indicate a MBGF consideration.
5. Downstream anchor terminals (DAT) are only for abutments and anchorage use, outside the horizontal clearance area of opposing traffic.
6. Direct application of MBGF to access rails is only for downstream rail connections outside the horizontal clearance area of opposing traffic. (This requires a minimum of three standard line posts plus the DAT terminal. See Detail A.)
7. The crown shall be widened to accommodate MBGF. Typically the "front slope" break should be 2'-0" from the back of the MBGF post. This applies to new construction on new alignment or where existing roadway cross section is widened. The MBGF shall be installed on the existing roadway crown width to be retained. (See Typical Cross Section of MBGF.)
8. For restrictive bridge widths: The MBGF should be properly transitioned from the existing bridge rail to the adjoining MBGF. (See MBGF Transition Standard). Metal beam guard fence at these bridge location(s) shall be located at the time of DAT or Taper, and be of the length necessary to provide the minimum of 2 ft. maximum offset from the shoulder edge in the approach direction.
9. Transition length and post spacing will vary depending on the transition type. Transition type will be shown elsewhere in the plans.
10. A minimum 25' length of MBGF will be required.



BRIDGE END DETAILS
(METAL BEAM GUARD FENCE APPLICATIONS TO RIGID RAILS)

BED-14

Florida Department of Transportation

Florida Department of Transportation

FILED	DATE	BY	SCALE
NOV 2007	10:00 AM	DR	AS SHOWN
NOV 2007	DECEMBER 2011	DR	AS SHOWN
REVISION			
NO.	DATE	BY	REASON
1			
2			
3			
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GENERAL NOTES

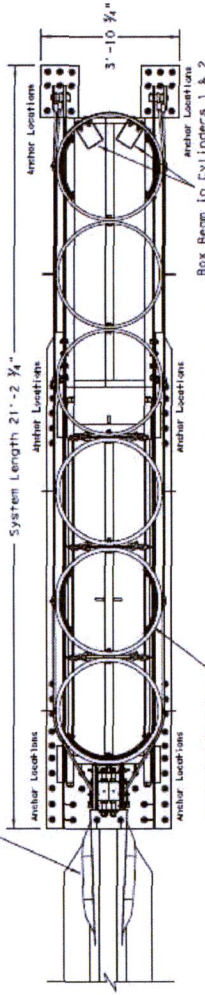
1. For specific information regarding installation and technical guidance of the system, contact Trinity Highway - Energy Absorption at 1888-323-6374, 70 W. Madison St., Suite 2350, Chicago, IL 60602
2. The nose of the REACT 350 shall be clad with a plastic wrap with standard deflection on both sides of the wrap and shall have a series of side marker reflectors on the wrap and shall have a series of side marker plastic wrap color orientation.
3. All steel components to be hot dipped galvanized except stakes, drive spikes, threaded bolts in backup unit, and wedge fittings on cables.
4. The installation area should be free from curbs, elevated objects, or depressions. If the REACT system is to span expansion joints contact the manufacturer.
5. The REACT system should be approximately parallel with the barrier or fl of merging barriers. The maximum permissible cross slope is 8%.
6. REACT 350 II has laminated panels in cylinders 1, 3, & 6.

TYPE	REACT 350	REACT 350 II	REACT 350 II
TYPE	4-B	4-C	6-C
TEST LEVEL	TL-2	TL-2	TL-3
OVERALL LENGTH	15'-3"	13'-8"	21'-3"
			19'-5"

FOUNDATION TYPE	MINIMUM THICKNESS	ANCHORAGE
A CONCRETE PAD ON ROADWAY	6"	WP-3 WITH 7" STUDS (4.5" EMBEDMENT)
B ASPHALT OVER CONCRETE PAVEMENT	6" CONCRETE PLUS ASPHALT THICKNESS	ANCHOR LENGTH REQUIRED IS 7" STUD
C ASPHALT OVER BASE	6" BASE	WP-3 WITH 18" STUDS (16.5" EMBEDMENT)
D ASPHALT ONLY	8"	WP-3 WITH 18" STUDS (16.5" EMBEDMENT)

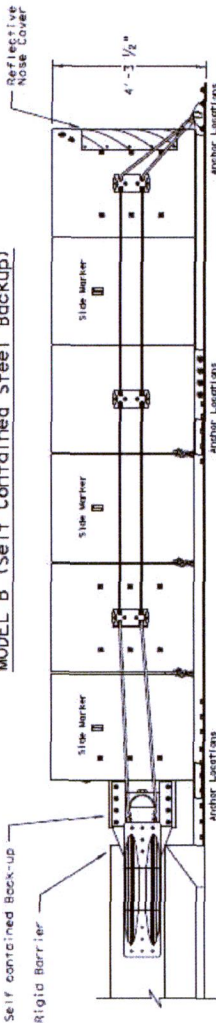
TYPICAL PLAN VIEW

MODEL B (Self Contained Steel Backup)



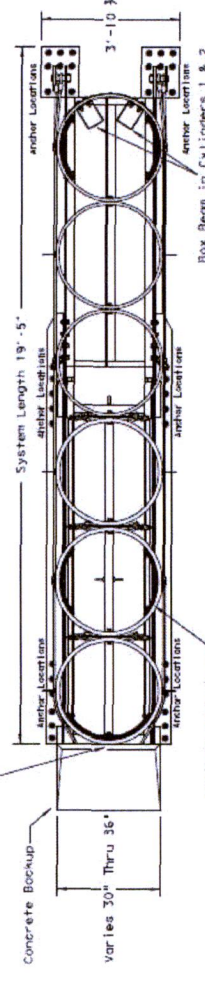
TYPICAL ELEVATION VIEW

MODEL B (Self Contained Steel Backup)



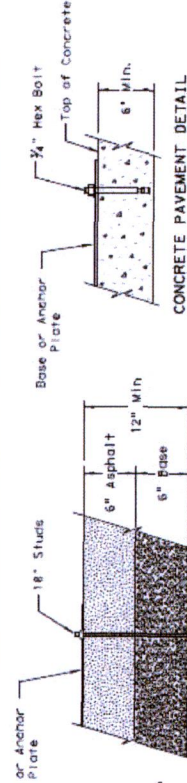
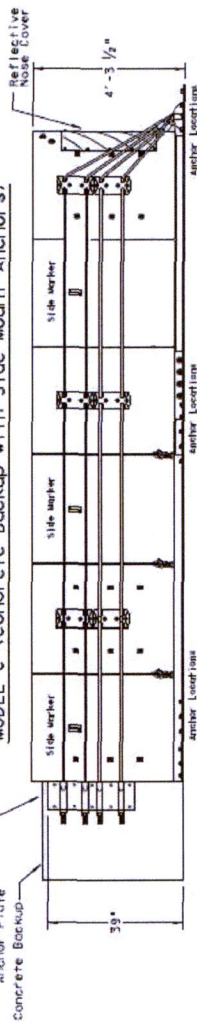
TYPICAL PLAN VIEW

MODEL C (Concrete Backup with Side Mount Anchors)

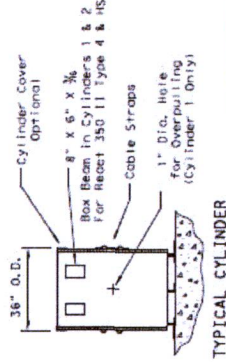


TYPICAL ELEVATION VIEW

MODEL C (Concrete Backup with Side Mount Anchors)



ASPHALT PAVEMENT DETAIL



TYPICAL CYLINDER

Design Division Standard
Texas Department of Transportation

**TRINITY HIGHWAY
ENERGY ABSORPTION
(REACT 350 NARROW)
(REACT 350 II NARROW)**

REACT (N) - 16

DATE	DESCRIPTION	BY	CHK	APP
10/20/07	ISSUE FOR CONSTRUCTION
07/20/07	ISSUE FOR CONSTRUCTION

DESIGNED BY: [Name]
CHECKED BY: [Name]
DATE: [Date]

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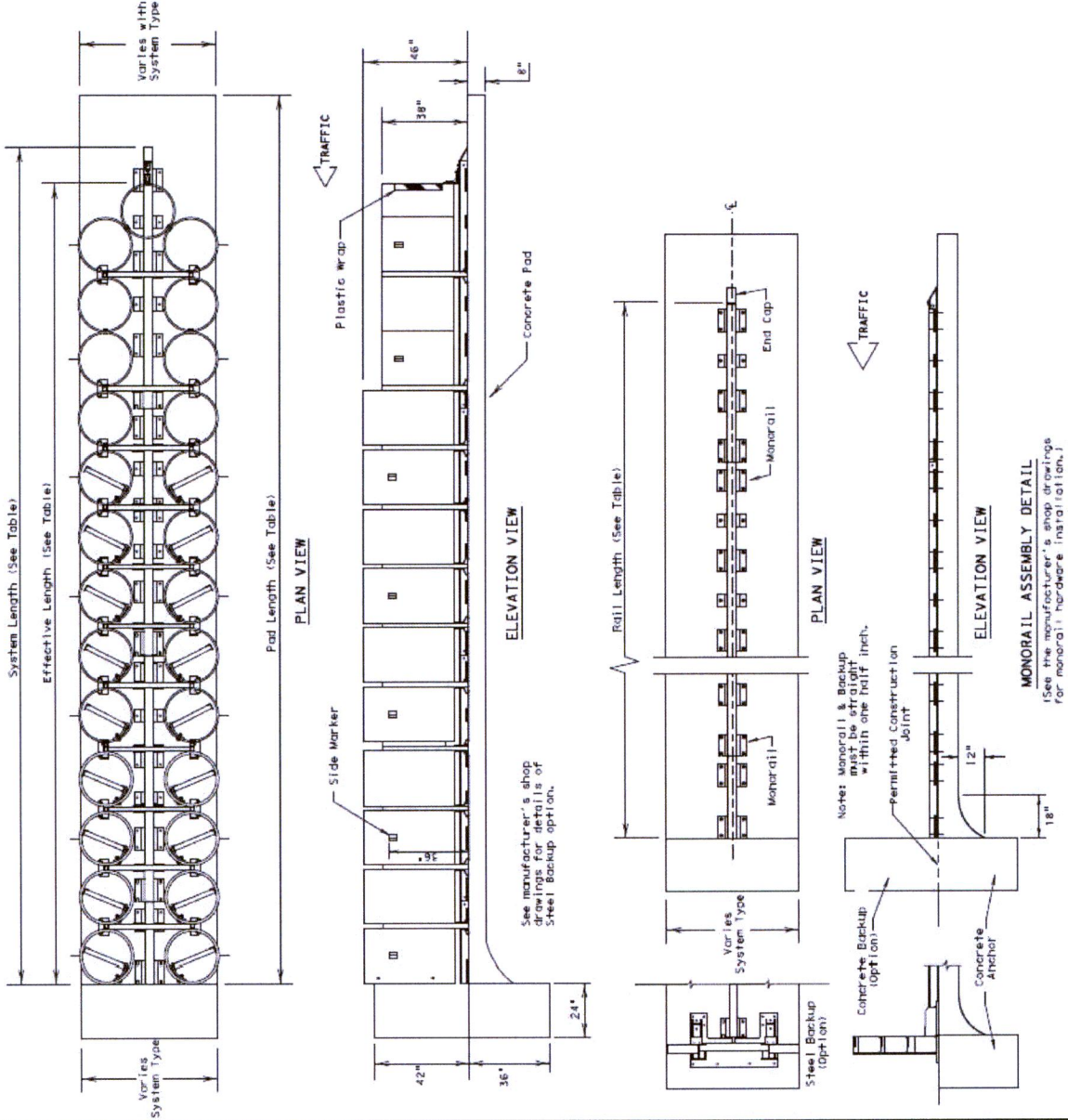
GENERAL NOTES

- For specific information regarding installation and technical guidance of the system, contact Trinity Highway - Energy Absorption at 118881323-8374, 70 W. Madison St., Suite 2350, Chicago, IL 60602
- The nose of the REACT 350 shall be clad with a plastic wrap with standard delineation colored to the wrap and shall have a series of side marker reflectors on both sides of the unit. See site plan views for marker and plastic wrap color orientation.
- For bi-directional traffic, appropriate transition details will be as shown on the manufacturer's shop drawings.
- Details of components for the REACTIM and backups and reinforcing details will be shown on the manufacturer's shop drawings.
- If the concrete pad is more than 20' over the length of the system, the concrete pad will require leveling, isolation, permissible cross-slope is 2%.
- The installation area should be free from curbs, elevated objects, or obstructions.
- The REACTIM system should be approximately parallel with the barrier or E of marking post.
- All steel components to be hot dipped galvanized except stakes, drive spikes, threaded bolts, in backup unit, and wedge fittings on cables.

SYSTEM TYPE	BACKUP WIDTH	TEST LEVEL	SYSTEM EFFECTIVE LENGTH	PAD LENGTH
W60	60"	TL-2 TL-3	18'-10" 30'-10"	19'-6" 32'-6"
W96	96"	TL-2 TL-3	18'-10" 34'-9"	19'-7" 35'-6"
W120	120"	TL-3	33'-10"	37'-2" 35'-6"

(See the manufacturer's shop drawings for additional details.)

ANCHOR SYSTEM TYPE
MP-3® polyester anchor/ing system with 1.5" studs, 5.5" embedment
FOUNDATION TYPES
Minimum 8" Reinforced concrete pad (Required reinforcing steel for concrete pad shall be shown on the manufacturer's shop drawings.)
Minimum 8" Non-reinforced concrete roadway (Reinforcing at least 12" wide by 30" long)
Minimum 7" Concrete deck structure, or
Minimum 6" Reinforced concrete roadway



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DATED

Texas Department of Transportation

TRINITY HIGHWAY
ENERGY ABSORPTION
CRASH CUSHION
(REACT 350 WIDE)
REACT (W) - 16

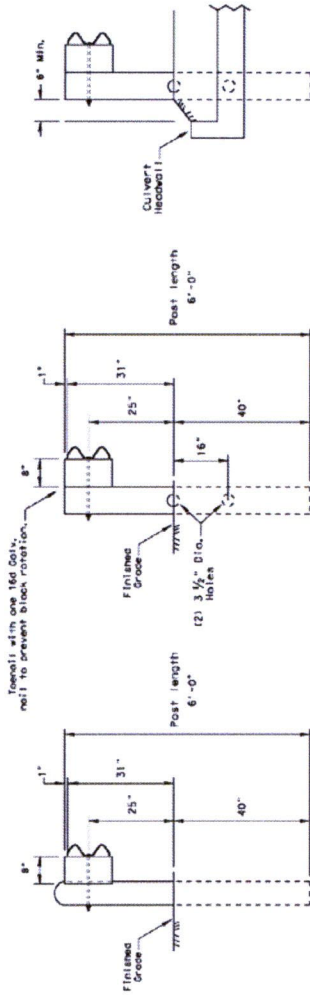
DATE PREPARED	DATE	BY	IN CHARGE
10/20/08	10/20/08	AW	AW
PROJECT NO.	SECTION	SHEET NO.	SHEET NO.

LOW MAINTENANCE

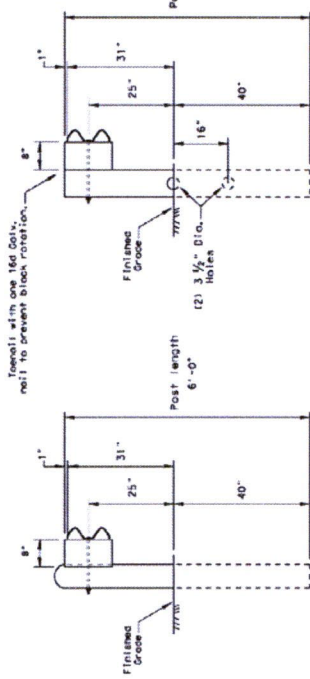
GENERAL NOTES

1. The type of line post, round wood post, rectangular wood post, or steel post will be as shown in the plans. The exact position of the transitions shall be as shown on the drawings. The posts shall be galvanized steel. Steel posts to be galvanized in accordance with Item 445, "Galvanizing".
2. Rail strength shall meet all requirements of Item 540, "Metal Beam Guard Fence" except as specified on this plan. The contractor may furnish rail elements of 12 1/2" or 28 four nominal lengths. The contractor may furnish rail elements of the midpoint splicing.
3. Rail post holes are offset 3" - 1 1/2" from standard guardrail to accommodate
4. Button head post bolts (ASTM A307) shall be of sufficient length to extend through the full thickness of the rail (ASTM A553) and no more than 3/4" beyond it. Button head bolts (ASTM A307) are 3/8" x 1 1/2" with a 3/8" double recessed end. The bolts shall be galvanized steel. The bolts shall be installed in accordance with Item "Metal For Structures". Fittings shall be subsidiary to the big item requiring construction of transition.
5. Where solid rock is encountered or where shown on the plans, the diameter of the holes shall be approximately 12 inches, the backfilling shall be with a cohesionless material, and embedment depth shall be 1' - 6" or more as directed by the Engineer.
6. Posts shall not be set in concrete, or any depth.
7. Refer to GF(31) Standard Sheet for additional details.

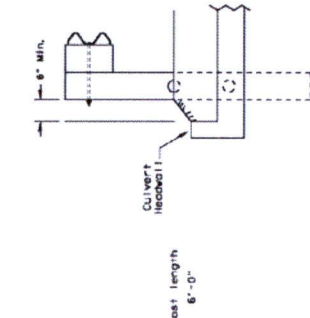
**Rectangular CRT Post
(6" x 6" x 6' Long)**
(6) CRT requires
See Elevation Detail for locations.



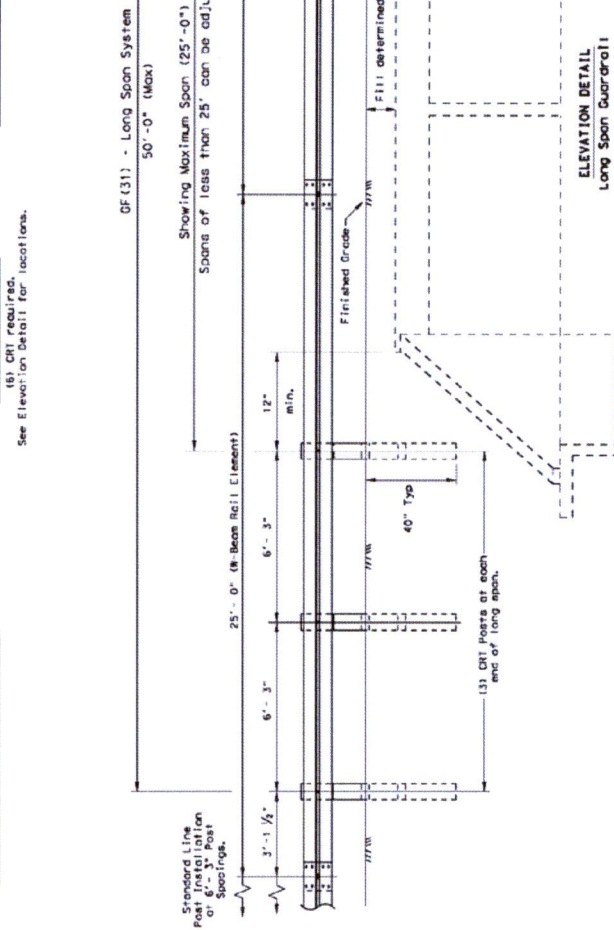
Standard Line Post Installation



**Lateral Offset Between the
Guardrail and the Culvert Headwall**



**GF(31) - Long Span System
50'-0" (Max)**



Notes:
Guardrail splices are located between the 6'-3" post spacings.

Texas Department of Transportation
Design Division

**METAL BEAM GUARD FENCE
(Long Span)
GF(31)LS-14**

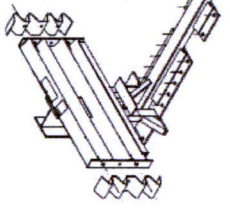
DATE	BY	CHKD	APP'D
01/11/2011	01/11/2011	01/11/2011	01/11/2011

GENERAL NOTES

- For specific information regarding installation and technical details, refer to the manufacturer's shop drawings for the QUAD II system. The system is manufactured by Trinity Highway Energy Absorption at 1888132-6374, 70 W. Madison St., Suite 2500, Chicago, IL 60662.
- For all-directional traffic, appropriate transition panels will be required.
- Details of components for the QUAD and backups and drawings approved by the Engineer shall be shown on the manufacturer's shop drawings.
- Concrete shall be class "5" with a minimum compressive strength of 4,000 p.s.i.
- If the cross slope varies more than 3% over the length of the system, the concrete pad will require leveling. Maximum permissible cross-slope is 8%.
- The installation area should be free from curbs, elevated objects, or depressions.
- The QUAD system should be approximately parallel with the barrier or % of merging barriers.
- Unit width selected should be adequate to protect an errant vehicle traveling at 15 degrees to the roadway from the face or corner of the fixed object.

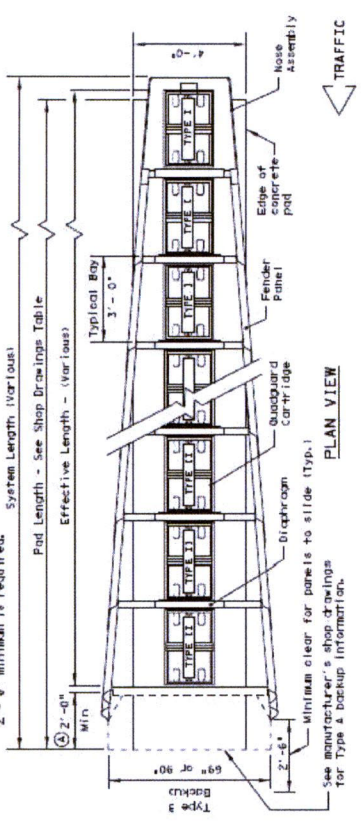
Test Level	MO. OF BAYS	NO. OF EFFECTIVE BAYS	SYSTEM LENGTH	WIDTH	DEPTH
TL-2	3	11'-0"	12'-0"	11'-6"	6"
TL-3	5	17'-0"	18'-0"	17'-6"	6"

Additional bays may be added if special considerations warrant and site conditions will accommodate additional length. QUAD II (W) units are available in 68" and 90" units. The minimum number of bays, and backup type shall be specified elsewhere in the plans.

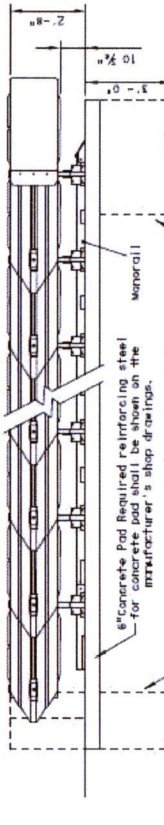


TYPE A TENSION STRUT BACKUP

TENSION STRUTS consist of diagonal struts, connections, and accessories, as detailed by the manufacturer. Typical application is for QUAD units attached to double-face quadrant. When used, a 2'-0" x 2'-0" x 3'-0" concrete backup shall be provided behind the front portion of the concrete pad, except where the QUAD unit is to be placed on continuously reinforced concrete pavement or non-reinforced concrete, 4,000 p.s.i., 18" minimum, 4,000 p.s.i., pavement.



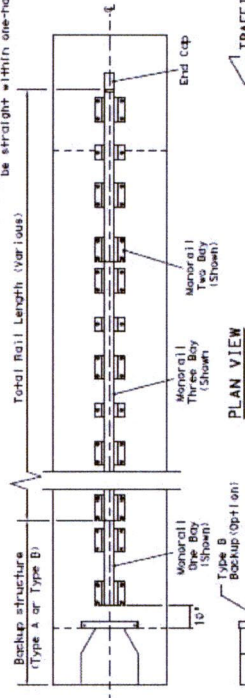
PLAN VIEW



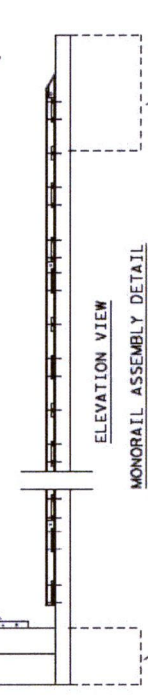
ELEVATION VIEW

REAR TOE ANCHOR BLOCK (required only with Type-B backup structure) Required reinforcing steel for concrete anchor shall be shown on the manufacturer's shop drawings.

CONCRETE TOE ANCHOR BLOCK (unless used on CRCP, Bridge Deck, or in front of concrete barrier, both Monorail and Backup assembly must be straight within one-half inch.



PLAN VIEW



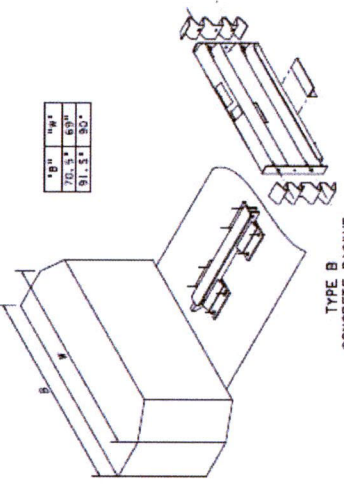
ELEVATION VIEW

MONORAIL ASSEMBLY DETAIL

(See the manufacturer's shop drawings for monorail hardware installation.)

ANCHORAGE requirements are as follows:

WITH FOUNDATION TYPES	ANCHOR WITH
Minimum six inch portland cement concrete pad	Epoxy anchoring system with 7' studs, 3, 5' embedment



TYPE B CAST-IN-PLACE CONCRETE WALL BACKUP

CAST-IN-PLACE CONCRETE WALL BACKUP: If cast-in-place structures such as bridge parapets, columns, or special walls are used as backup structures, then intermediate walls will be provided between the structures and the QUAD unit. The backup shall be reinforced with a steel cage. A cast-in-place transition section from concrete barrier may be used. Reinforcing steel should transition section. Details for the intermediate walls, cast-in-place transition sections, or other modifications will be shown on the manufacturer's shop drawings. Backup may be used on continuously reinforced concrete pavement, 4,000 p.s.i., 18" minimum, 4,000 p.s.i., in those cases, all vertical reinforcement shall be placed prior to pouring proposed decks as approved by the Engineer.

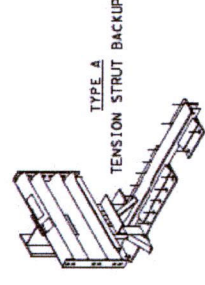
Texas Department of Transportation
TRINITY HIGHWAY ENERGY ABSORPTION (QUADGUARD II) (WIDE)
QUAD (W) - 17

DATE	BY	CHKD	APP'D

REUSABLE

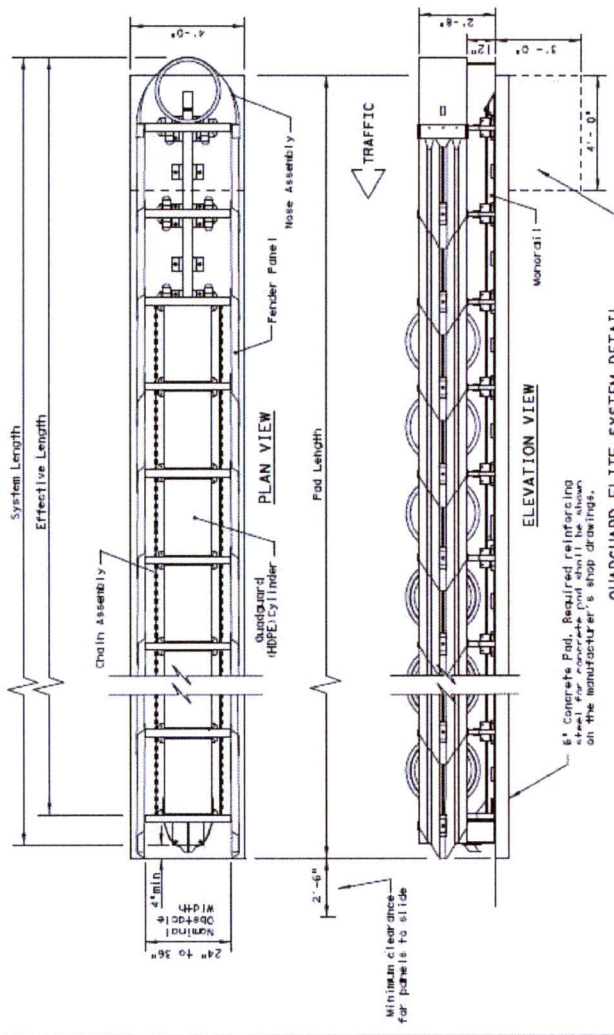
GENERAL NOTES

1. For specific information regarding installation and technical details of this system, contact Trinity Highway Energy Absorption at 11888-323-4374, 70 W. Madison St., Suite 2500, Chicago, IL 60602.
2. After each impact, measurements should be taken of the shortest HPPE cylinder in the system. If the diameter is less than 2.0 inches, all the HPPE cylinders will need to be replaced, including the nose cylinder. For bi-directional traffic, appropriate transition panels will be required.
3. Details of components for the QCELITE and backups and reinforcing details will be shown on the manufacturer's shop drawings furnished to the Engineer.
4. Concrete shall be class "S" with a minimum compressive strength of 4,000 P.S.I.
5. If the cross-slab varies more than 2% over the length of the system, the concrete pad will require leveling. Maximum permissible cross-slope is 8%.
6. The installation area should be free from curbs, elevated objects, or depressions.
7. The QCELITE system should be approximately parallel with the barrier or E of merging barriers.
8. Unit width selected should be adequate to protect an errant vehicle from drifting off its degree to the roadway from the face or corner of the fitted object.



TENSION STRUT:
Consists of diagonal struts, connections, and accessories, as detailed by the manufacturer, located at the rear of the QCELITE unit.

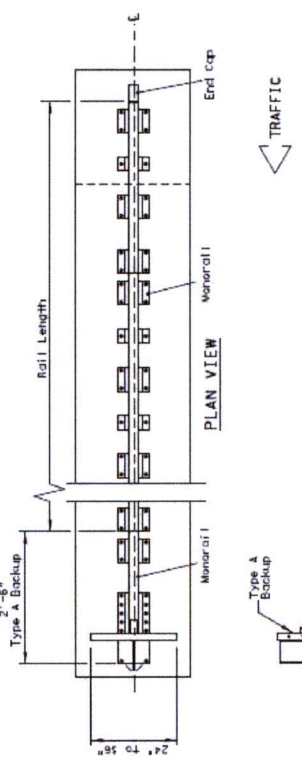
Typical applications:
QCELITE units (Double-Face Guard-Rail.) when used as a 4'-0" x 4'-0" x 3'-0" concrete toe anchor block shall be provided beneath the front portion of the concrete pad, except where the QCELITE unit is to be placed on continuously reinforced concrete pavement or bridge deck. If minimum, 4,000 psi or non-reinforced concrete pavement (8' minimum, 4,000 psi)



Concrete toe anchor block required, unless used on CRCP, Bridge Deck, or in front of concrete barrier.

QUADGUARD ELITE SYSTEM DETAIL

6" Concrete Pad, Required reinforcing steel for concrete pad shall be shown on the manufacturer's shop drawings.



Concrete toe anchor block required, unless used on CRCP, Bridge Deck, or in front of concrete barrier.

MONORAIL ASSEMBLY DETAIL

(See the manufacturer's shop drawings for monorail hardware installation.)

Notes: Monorail & Backup assembly must be straight within overall 1/4-inch.

Test Level	QUADGUARD ELITE (NARROW) SYSTEM				OBSTACLE WIDTH
	NO. OF BAYS	UNIT LENGTH	PAD LENGTH	RAIL LENGTH	
TL-2	5	17'-11"	17'-3"	18'-0"	12'-0"
TL-3	8	26'-7"	25'-11"	27'-1"	21'-0"

SEE MANUFACTURER'S SHOP DRAWINGS FOR TYPE A BACKUP INFORMATION.

ANCHORAGE REQUIREMENTS ARE AS FOLLOWS:

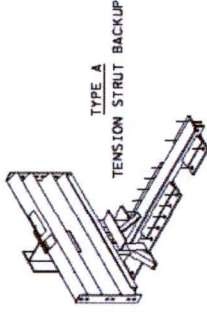
WITH FOUNDATION TYPE:	ANCHOR WITH:
Minimum 6" post-tensioned reinforced concrete pad or 8" non-reinforced concrete pad	Epoxy anchoring system with 7" studs and 5.5" embedment

DATE: _____ FILE: _____

LOW MAINTENANCE

GENERAL NOTES

1. For specific information regarding installation and technical guidance of the system, contact Trinity Highway - Energy Absorption at (688)353-6374, 70 W. Madison St., Suite 2350, Chicago, IL 60602
2. After each impact, measurements should be taken at the shortest outside diameter of the cast cylinder (closest to the backup). When this diameter is reduced from its original 32" to 26" or less, all the light cylinders will need to be replaced, including the nose cylinder.
3. For bi-directional traffic, appropriate transition panels will be required.
4. Details of components for the OGELITE and backups and reinforcing details will be shown on the manufacturer's shop drawings
5. Concrete shall be class "S" with a minimum compressive strength of 4,000 p.s.i.
6. If a bridge application more than 7% over the length of the system, the concrete pad will require leveling. Maximum permissible cross-slab is 8".
7. The installation area should be free from curbs, elevated objects, or depressions.
8. The OGELITE system should be approximately parallel with the barrier or E of merging barriers.
9. Unit width selected should be adequate to protect on-coming vehicle travelling at 15 degrees to the roadway from the face or corner of the fixed object.



TENSION STRUT
Consists of diagonal struts, connections, and accessories, as provided by the manufacturer, located at the rear of the OGELITE unit.

Typical applications
OGELITE units attached to Double-Flare Guard-Rail. 1 When used a 4'-0" x 4'-0" x 3'-0" concrete toe anchor block shall be provided beneath the front portion of the concrete pad, except where the OGELITE unit is to be placed on continuously reinforced concrete pavement or bridge deck (minimum, 4,000 p.s.i. non-reinforced) concrete pavement (8" minimum, 4,000 p.s.i.)

Test Level	NO. OF BAYS	SYSTEM LENGTH	UNIT LENGTH	PAD LENGTH	RAIL LENGTH	OBSTACLE WIDTH
TL-2	7	17'-11"	17'-3"	18'-0"	12'-0"	69" to 90"
TL-3	8	26'-7"	25'-11"	27'-1"	21'-0"	

SEE MANUFACTURER'S SHOP DRAWINGS FOR TYPE A BACKUP INFORMATION.

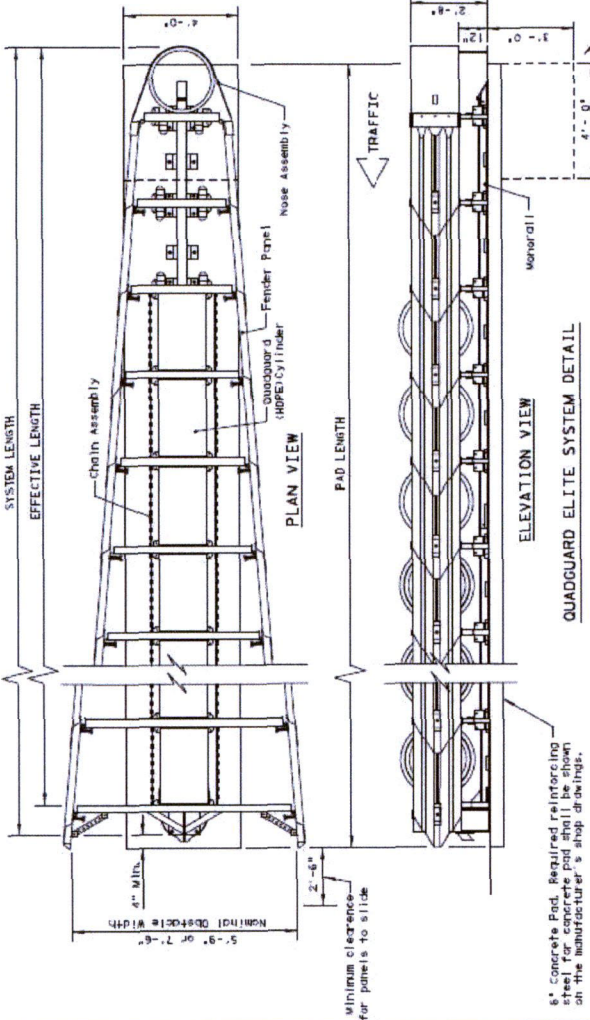
Concrete toe anchor block required, unless used on CRCP, Bridge Deck, or in front of concrete barrier.

WITH FOUNDATION TYPES:
Minimum 6" portland cement reinforced concrete pad or 8" non-reinforced concrete pad with 7" studs and 5.5" embedment

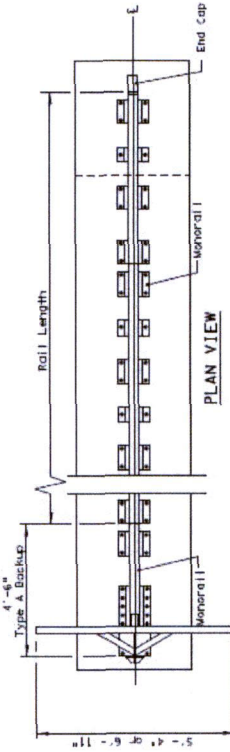
ANCHORAGE REQUIREMENTS ARE AS FOLLOWS

Concrete toe anchor block required, unless used on CRCP, Bridge Deck, or in front of concrete barrier.

LOW MAINTENANCE



6" Concrete Pad. Required reinforcing steel for concrete pad shall be shown on the manufacturer's shop drawings.



Note: Monorail & Backup assembly must be straight within one half inch.

(See the manufacturer's shop drawings for monorail hardware installation.)



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DATE: _____
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Texas Department of Transportation

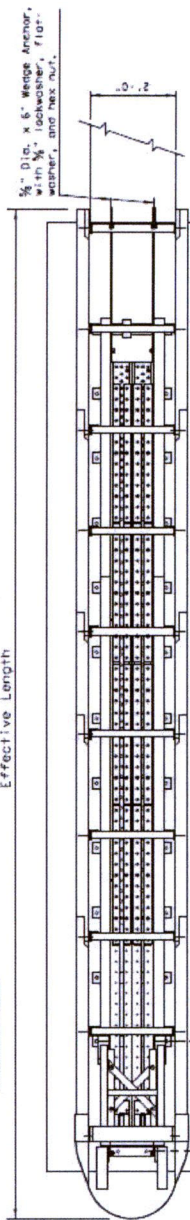
**TRINITY HIGHWAY
ENERGY ABSORPTION
(QUADGUARD ELITE)
(WIDE)**

OGELITE (W) - 17

DESIGN NO.	DATE	BY	IN CH.
REVISED	DATE	BY	REASON
DATE	BY	NO.	NO.

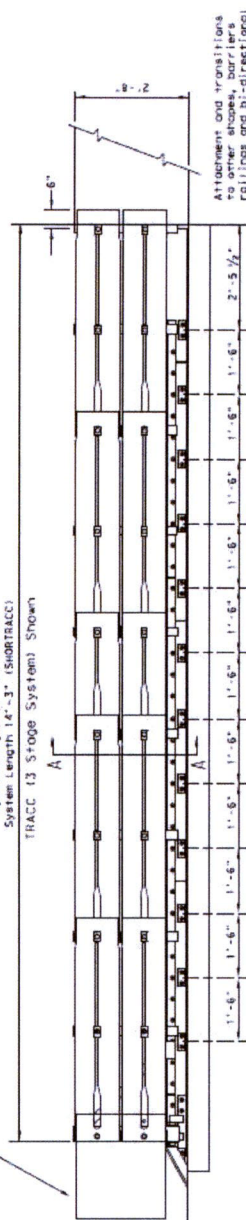
GENERAL NOTES

- For specific information regarding installation and technical guidance of the system, contact Trinity Highway at 14881323-6374, 2525 N. Stemmons Freeway - Dallas, TX 75207
- For bi-directional traffic, appropriate transition panels will be required.
- Details of components for the TRACC and backups and reinforcing details will be shown on the manufacturer's shop drawings furnished to the Engineer.
- Concrete shall be class "S" with a minimum compressive strength of 4,000 p.s.i.
- List the cross-slope varies more than 2% over the length of the backup. The cross-slope shall be rebar leveling. Maximum permissible cross-slope is 8%.
- The installation area should be free from curbs, elevated objects, or depressions.
- The backup system should be approximately parallel with the barrier for 5' of merging/diverging.



Attachment shown is to anchor with 3/8" dia. x 6" wedge anchor, with 3/8" lockwasher, flat washer, and hex nut.

Attachment shown is to anchor with 3/8" dia. x 6" wedge anchor, with 3/8" lockwasher, flat washer, and hex nut. Modified Concrete Traffic Barriers. Traffic flow is uni-directional.



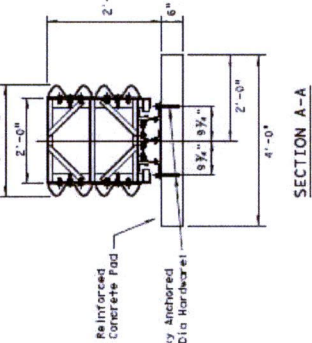
ELEVATION VIEW

TYPE (NARROW)	TEST LEVEL	SYSTEM LENGTH	EFFECTIVE LENGTH	PAD LENGTHS
FASTTRACC (4 Stage System)	70	26'	27'-9"	26'-8"
TRACC (3 Stage System)	TL-3	21'-3"	23'-0"	22'-0" 23'-0" 24'-0"
SHORTTRACC (2 Stage System)	TL-2	14'-3"	16'-0"	15'-0" 16'-0" 17'-0"

The Stage System refers to number of replaceable steel sections that could be replaced independently. Concrete pad length on TRACC & SHORTTRACC depends on backup type.

BACKUP SUPPORT OPTIONS	TRANSITION OPTIONS
Square Concrete Backup	Vertical Wall
Concrete Barrier (CTB) Backup	Modified (CTB) to Vertical Wall
Single Side Concrete Barrier (SSCB)	Concrete Barrier (CTB)
Guardrail Backup (Rose-Plated Post)	Guardrail (W-Beam)
Guardrail Backup (Twelve Post)	Guardrail (Tri-Beam)

For bi-directional transition panel details (see manufacturer's product manual) Backup and transition types are shown elsewhere on the plans, i.e., reinforcement location details or in the general notes.



SECTION A-A

FAST TRACC		SHORT TRACC		BILL OF MATERIAL	
PART #	QTY	PART #	QTY	DESCRIPTION	
23956A	1			FASTTRACC UNIT ASSEMBLY	
23950A	1			TRACC UNIT ASSEMBLY	
23957A	1			SHORTTRACC UNIT ASSEMBLY	
33100	4	4	4	3/8" Lockwasher	
44510	4	4	4	3/8" DIA x 6" Wedge Exp. Anchor	
65310	1	1	1	Plastic Nosepiece	
66680	4	4	4	Reflective Sheeting	
* ANCHOR HARDWARE (CONCRETE BASE)					
52040	32	26	18	3/8" DIA x 7 1/2" A11 Thrd. Rod	
33100	32	26	18	3/8" Lockwasher	
33610	32	26	18	3/8" Hex Nut	
33000	32	26	18	3/8" Flat Washer	
52080	3	3	2	TRACC adhesive HIT HT150 KIT	
* ANCHOR HARDWARE (ASPHALT BASE)					
63800	32	26	18	3/8" DIA x 18" A11 Thrd. Rod	
33100	32	26	18	3/8" Lockwasher	
33610	32	26	18	3/8" Hex Nut	
33000	32	26	18	3/8" Flat Washer	
52080	3	3	2	TRACC adhesive HIT HT150 KIT	

* See manufacturer's product manual

Texas Department of Transportation

Design Division Standard

TRINITY HIGHWAY
CRASH CUSHION
(NARROW)
TRACC (N) - 16

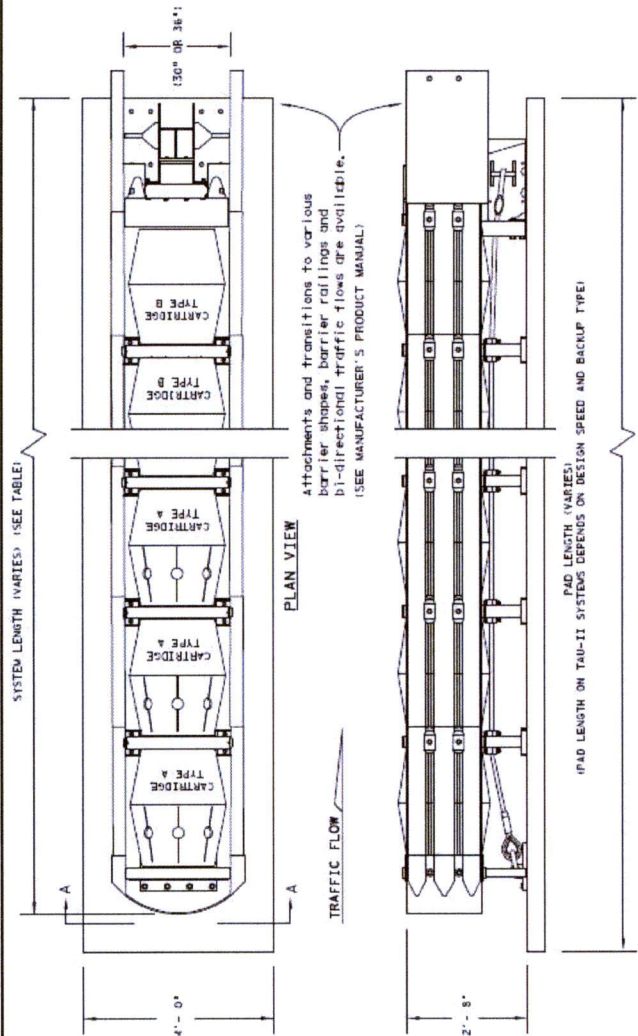
DATE	PROJECT	CONTRACT	NO.	DATE
07/10/10	Trinity Hwy	2006	16	10/10
DESIGNED BY	CHECKED BY	DATE	BY	DATE
...

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- GENERAL NOTES**
- For specific information regarding the installation and technical guidance of the system, contact Lindsay Transportation Solutions - Barrier Systems, Inc. at (707) 374-6800, 180 River Road, Rio Vista, CA 94571.
 - Refer to the installation manual and configuration chart for system assembly and element orientation. For bi-directional traffic, appropriate transition panels will be required.
 - Additional details for the backup support option, transition option and foundation option will be shown on the manufacturer's shop drawings furnished to the Engineer.
 - Concrete shall be class "5" with a minimum compressive strength of 4,000 p.s.i.
 - Maximum permissible cross-slope is 8%.
 - The installation area should be free from curbs, elevated objects, or depressions, or merging barriers.
 - The TAU-II systems should be approximately parallel with the barrier or center line of merging barriers.
 - 30-inch (30") model shown, also available in 36-inch (36") configuration.



BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
8030764	1	Front Support
8030763	TBD	Middle Support Diaphragm
180	1	Backup Support Option (See Table)
8010802	TBD	Energy Absorbing Cartridge, Type A
8010222	TBD	Energy Absorbing Cartridge, Type B
180	1	Anchor Package
8001005	1	Front Support Leg Kit
8010202	TBD	Cable Guide Assembly Kit
8010202	TBD	Sliding Panel
8001003	TBD	Slider Assembly Kit
8010639	2	End Panel
8010851	4	Flow Panel Mount
TBD	1	Front Cable Anchor
TBD	1	Nose Piece
TBD	2	Cable
8001011	1	Nose Mounting Hardware

(TBD) = To Be Determined, depending on Backup type and System Length, (see manufacturer's product manual)

TAU-II (NARROW) SYSTEM LENGTHS

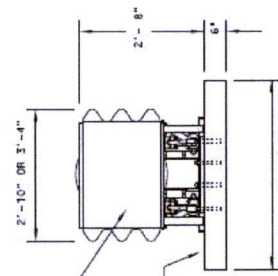
BACKSTOP	TL-2	TL-3	70 mph
PCB	12'-7"	26'-10"	29'-7"
FLUSH MOUNT	13'-0"	27'-3"	30'-0"
COMPACT	14'-3"	28'-6"	31'-3"

NOTE: SYSTEM LENGTHS ARE ±2"

TRANSITION OPTIONS

VERTICAL WALL
CONCRETE TRAFFIC BARRIERS
W-BEAM GUARDRAIL
THREE BEAM GUARDRAIL

BACKUP AND TRANSITION TYPES ARE SHOWN ELSEWHERE ON THIS ATTENUATOR LOCATION DETAILS OR IN THE GENERAL NOTES.
FOR BI-DIRECTIONAL TRANSITION PANEL AND END SIDE DETAILS, SEE MANUFACTURER'S PRODUCT MANUAL.



FOUNDATION OPTIONS

6" REINFORCED CONCRETE
8" UNREINFORCED CONCRETE
ASPHALT OVER CONCRETE WITH MINIMUM 6" EMBEDMENT IN CONCRETE
6" ASPHALT OVER 6" COMPACT SUBBASE
8" MINIMUM ASPHALT

FOR STEEL PLACEMENT IN CONCRETE FOUNDATIONS, SEE MANUFACTURER'S PRODUCT MANUAL.

BACKUP SUPPORT OPTIONS

COMPACT (STAND ALONE)
FLUSH MOUNT
PCB (CONCRETE BARRIER)

Texas Department of Transportation
Design Division Standard

LTS-BARRIER SYSTEMS
CRASH CUSHION
(NARROW UNIT)
TAU-II (N) - 16

DATE: 04/15/10
REVISED: 07/20/10
REVISED: 02/24/11

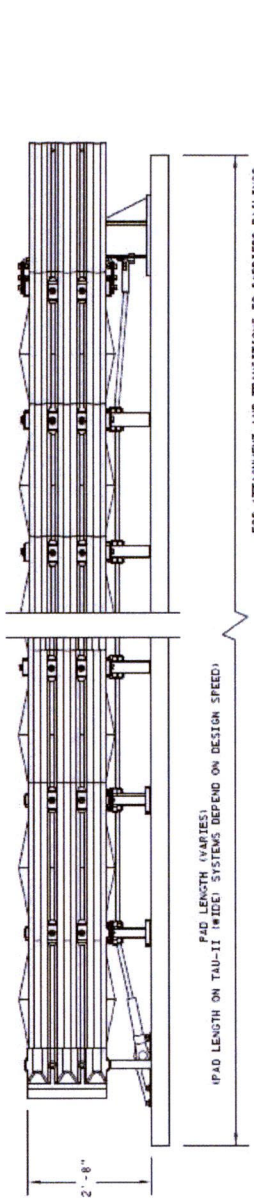
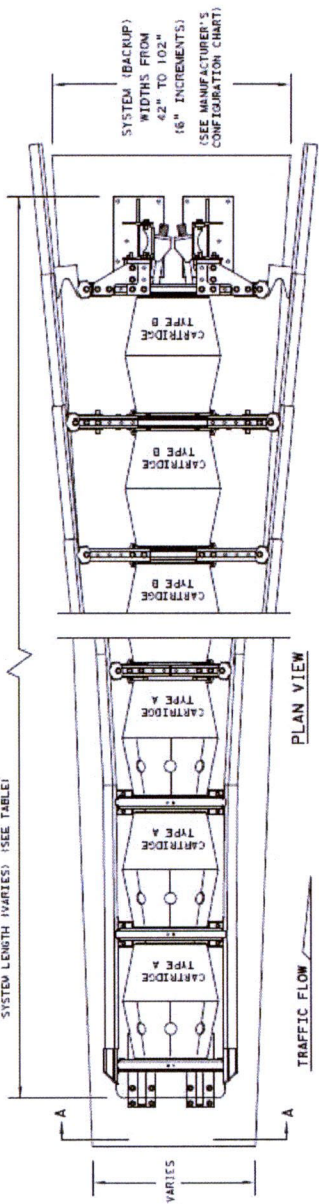
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JOB: []
SHEET NO.: []

REUSABLE

DATE: _____ FILE: _____

GENERAL NOTES

1. For specific information regarding installation and technical guidance of the system, contact: Lanesy Transportation Solutions - Barrier Systems, Inc. at (801) 374-8888, 180 River Road, Rio Vista, CA 94571
2. Refer to installation manual and configuration charts for specific system assembly and element orientation.
3. For unusual locations see the manufacturer's configuration chart. If the configuration chart does not offer a system suitable for the location a special design, or design details made be required, contact the manufacturer for further information.
4. For bi-directional traffic, appropriate transition panels will be required.
5. Additional details for the backup support options, transition panels, and anchoring hardware are shown on the manufacturer's shop drawings furnished to the Engineer.
6. Concrete shall be class "S" with a minimum compressive strength of 4,000 P.S.I.
7. Maximum permissible cross-slope is 8%.
8. The installation area should be free from curbs, elevated objects, or depressions.
9. The TAU-II system should be approximately parallel with the barrier or $\frac{1}{2}$ of merging barriers.

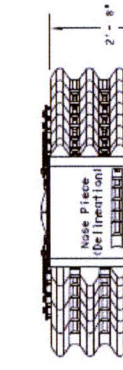


FOR ATTACHMENT AND TRANSITIONS TO BARRIERS RAILINGS AND BI-DIRECTIONAL TRAFFIC FLOWS ARE AVAILABLE. (SEE MANUFACTURER'S PRODUCT MANUAL)

FOUNDATION OPTIONS

6" REINFORCED CONCRETE
8" UNREINFORCED CONCRETE
ASPHALT OVER CONCRETE WITH MINIMUM 6" EMBEDMENT IN CONCRETE

FOR STEEL PLACEMENT IN CONCRETE FOUNDATIONS. SEE MANUFACTURER'S PRODUCT MANUAL.



NOTE: NOISE PIECE DELINEATION ORIENTATION, IS SHOWN ELSEWHERE ON THE PLANS.

TAU-II (WIDE) SYSTEM LENGTHS

SYSTEM WIDTH	TL-2	TL-3	TL-3	70 MPH
42"	14'-4"	28'-5"	31'-3"	31'-3"
48"	14'-4"	28'-5"	31'-3"	31'-3"
54"	14'-4"	28'-5"	31'-3"	31'-3"
60"	11'-5"	28'-5"	31'-3"	31'-3"
66"	11'-5"	25'-7"	28'-5"	28'-5"
72"	11'-5"	25'-7"	25'-7"	25'-7"
78"	11'-5"	25'-7"	25'-7"	25'-7"
84"	11'-5"	25'-7"	25'-7"	25'-7"
90"	11'-5"	25'-7"	25'-7"	25'-7"
96"	11'-5"	25'-7"	25'-7"	25'-7"
102"	11'-5"	25'-7"	25'-7"	25'-7"

NOTE: SYSTEM LENGTHS ARE 1/2-2"

- BACKUP SUPPORT**
- WIDE FLANGE BACKUP (STAND ALONE)
- TRANSITION OPTIONS**
- VERTICAL WALL
 - CONCRETE TRAFFIC BARRIER
 - W-BEAM GUARDRAIL
 - THREE BEAM GUARDRAIL

TRANSITION TYPES ARE SHOWN ELSEWHERE ON THE PLANS. (I.E. ATTENUATOR LOCATION DETAILS OR IN THE GENERAL NOTES).

FOR BI-DIRECTIONAL TRANSITION PANEL AND END SHOE DETAILS, SEE MANUFACTURER'S PRODUCT MANUAL.

BILL OF MATERIAL

PRODUCT	QTY	DESCRIPTION
B010704	1	FRONT SUPPORT
B010703	TBD	MIDDLE SUPPORT
TBD	TBD	XL BULKHEAD
TBD	TBD	XXL BULKHEAD
TBD	TBD	XXXL BULKHEAD
TBD	1	BACKUP SUPPORT
TBD	1	FRONT CABLE ANCHOR
TBD	1	NOSE
B010202	TBD	SLIDING PANEL
B010659	1	END PANEL
K001003	TBD	SLIDER ASSEMBLY KIT
B010902	TBD	ENERGY ABSORBING CARTRIDGE, TYPE A
B010722	TBD	ENERGY ABSORBING CARTRIDGE, TYPE B
TBD	2	CABLE
K001031	TBD	LATERAL SUPPORT KIT
K001004	TBD	CABLE GUIDE KIT
K001005	2	FRONT SUPPORT LEG KIT
TBD	1	ANCHORING PACKAGE
K001013	1	NOSE ATTACHING HARDWARE

(TBD) = To Be Determined, depending on Backup Width, Backup Type and System Lengths. (See manufacturer's product manual)

Texas Department of Transportation
Design Division
Standard

**LTS-BARRIER SYSTEMS
CRASH CUSHION
(WIDE UNIT)**

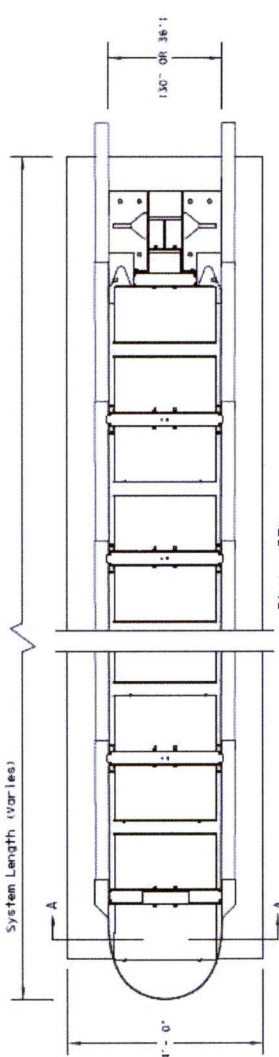
TAU-II (W) - 16

DATE	REVISED	DATE	REVISED
01/10/16	01/10/16	01/10/16	01/10/16
DESIGNED BY	CHECKED BY	DATE	REVISED
01/10/16	01/10/16	01/10/16	01/10/16
PROJECT NO.	DATE	PROJECT NO.	DATE
6314-60-001	01/10/16	6314-60-001	01/10/16
NO. OF SHEETS	TOTAL SHEETS	NO. OF SHEETS	TOTAL SHEETS
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REUSABLE

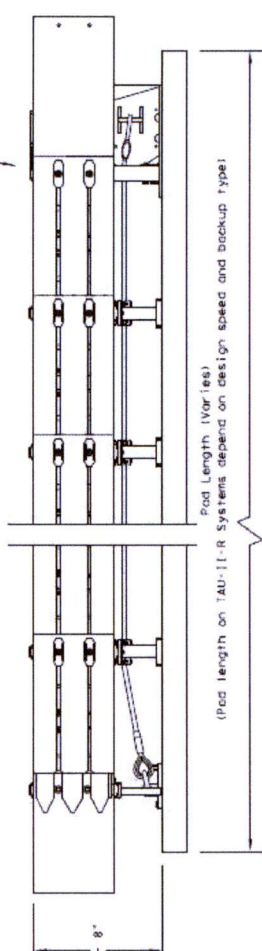
GENERAL NOTES

- For specific information regarding installation and technical guidance of the system, contact Lindsay Transportation Solutions - Barrier Systems, Inc. at (707) 374-8800, 180 River Road, Rio Vista, CA 94571
- For bi-directional traffic, appropriate transition panels will be required.
- Additional details for the backup support option, transition options and foundation options will be shown on the manufacturer's shop drawings furnished to the Engineer.
- Concrete shall be class "S" with a minimum compressive strength of 4,000 psi.
- Maximum permissible cross-slope is 8%.
- The installation area should be free from curbs, elevated objects, or depressions.
- The TAU-II-R system should be approximately parallel with the barrier or center of merging barriers.
- Refer to universal TAU-II-R configuration chart for specific systems configuration number and location of each type of energy absorbing element.
- 30-inch (36") model shown, also available in 36-inch (36") configuration.

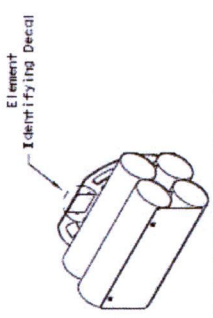


PLAN VIEW

Attachments and transitions to various barrier shapes, barrier railings and bi-directional traffic flows are available. (SEE MANUFACTURER'S PRODUCT MANUAL)



ELEVATION VIEW



ENERGY ABSORBING ELEMENTS (EAE)

BACKUP SUPPORT OPTIONS	
Compact (Steel Alone)	
Flush Mount	
PCB (Concrete Barrier)	

TAU-II-R (NARROW) SYSTEM LENGTHS	
BACKSTOP	TL-3 70' min
PCB	13'-7" 27'-10" 30'-7"
Flush Mount	14'-0" 28'-3" 31'-0"
Compact	15'-3" 29'-6" 32'-3"

Backup and Transition types are shown elsewhere on the plans, i.e. Attenuator location details or in the general notes.

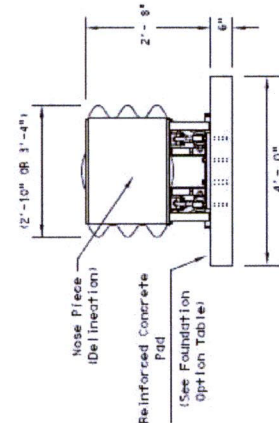
Notes: System lengths are ± 2'

TRANSITION OPTIONS	
Vertical wall	
Concrete Traffic Barriers	
W-Beam guardrail	
Thrie Beam Guardrail	

For bi-directional transition panel and end shoe details, (See manufacturer's product manual.)

FOUNDATION OPTIONS	
6" Reinforced Concrete	
8" Unreinforced Concrete	
Asphalt over Concrete with Minimum 6" Embedment in Concrete	
6" Asphalt over 6" Compact Subbase	
8" Minimum Asphalt	

For steel placement in concrete foundations, (See manufacturer's product manual)



SECTION A-A

Nose Piece deflection orientation, is shown elsewhere on the plans.

PRODUCT CODE	QTY	DESCRIPTION
B030704	1	Front Support
B030703	180	Mid Support
T80	1	Backstop Assembly (See Table)
T80	1	Front Cable Anchor
B070202	180	Sliding Panel
B070819	2	End Panel
K001003	1	Slider Assembly Kit
B51-120206-KIT	T80	TAU-II-R Slider Kit
B51-110731-KIT	T80	TAU-II-R EAE Mounting Kit
B51-107209-00	T80	Energy Absorbing Element, Type 1
B51-107200-00	T80	Energy Absorbing Element, Type 2
B51-107201-00	T80	Energy Absorbing Element, Type 3
B51-1110009-00	T80	Energy Absorbing Element, Type 3A
T80	T80	Cable Assembly
K001004	T80	Cable Guide Kit
K001005	2	Front Support Leg Kit
B070851	4	Plate Panel Mount
T80	1	Anchoring Package

(T80) = To Be Determined, depending on Backup Type and System Length.
(See manufacturer's product manual for details)

Texas Department of Transportation

LTS-BARRIER SYSTEMS

CRASH CUSHION

(R-NARROW)

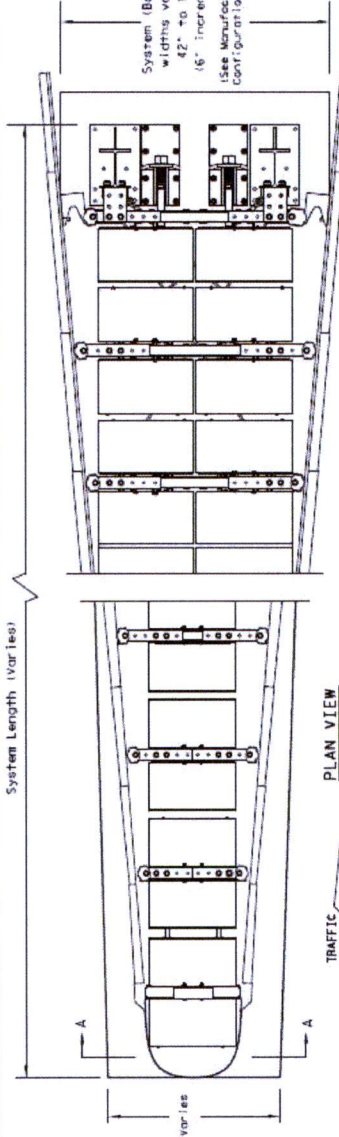
TAU-II-R (N) - 16

Proj. No.	10111111.000	Issued	10/10/07	Drawn by	010
Contract	0310078	Revised	02/07/2013	Checked by	010
Revision	001	By	02/07/2013	Scale	AS SHOWN
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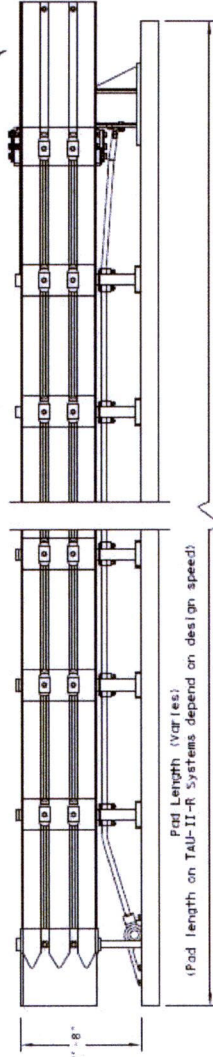
GENERAL NOTES

- For specific information regarding installation and technical guidance of the system, contact Lindsay Transportation Solutions - Barrier Systems, Inc. at (707) 374-6800, 180 River Road, Rio Vista, CA 94971
- For bi-directional traffic, appropriate transition details will be required.
- Additional details for the backup support option, transition option and foundation option will be shown on the manufacturer's shop drawings furnished to the Engineer.
- Concrete shall be class "S" with a minimum compressive strength of 4,000 psi.
- Maximum permissible cross-slope is 8%.
- The installation area should be free from curbs, elevated objects, or ground depressions.
- The TAU-II-R system should be installed approximately parallel with the carrier or center of rearing barrier.
- Refer to universal TAU-II-R configuration chart for system configuration numbers and location of each type of energy absorbing element.

System (Backup) width varies 42" to 102" (6" increments) (See Manufacturer's Configuration Chart)



Attachments and transitions to various barrier shapes, barrier railings and bi-directional traffic flows are available. (See manufacturer's product manual)



ELEVATION VIEW

TRAFFIC

TAU-II-R (WIDE) SYSTEM LENGTHS		
SYSTEM WIDTH	TL-2	TL-3
42"	15'-4"	29'-5"
48"	15'-4"	29'-5"
54"	15'-4"	29'-5"
60"	12'-5"	29'-5"
66"	12'-5"	26'-7"
72"	12'-5"	26'-7"
78"	12'-5"	26'-7"
84"	12'-5"	26'-7"
90"	12'-5"	26'-7"
96"	12'-5"	26'-7"
102"	12'-5"	26'-7"

Note: System Lengths are +/- 2"

FOUNDATION OPTIONS

- 6" Reinforced Concrete
- 8" Unreinforced Concrete
- Asphalt over Concrete with Minimum 6" Embedment in Concrete

For steel placement in concrete foundations. (See manufacturer's product manual)

TRANSITION OPTIONS

- Vertical Wall
- Concrete Traffic Barriers
- W-Beam Guardrail
- Tie Beam Guardrail

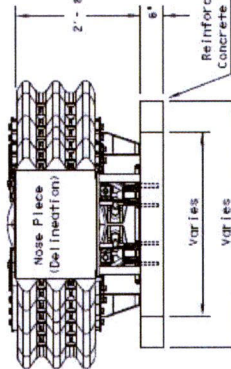
For bi-directional transition panel and end shoe details. (See manufacturer's product manual)

BACKUP SUPPORT OPTIONS

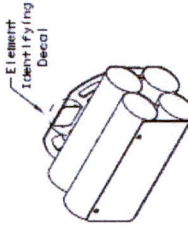
- Wide Flange (stand alone)
- Backup and Transition types are shown elsewhere on the plans, (i.e. Attenuator location details or in the general notes).

SECTION A-A

Nose Piece delineation or transition is shown elsewhere on the plans.



ENERGY ABSORBING ELEMENTS (EAE)



BILL OF MATERIAL

PRODUCT CODE	QTY	DESCRIPTION
B030704	1	Front Support
B030703	TBD	Mid Support
TBD	TBD	XL Bulhead
TBD	TBD	XXL Bulhead
TBD	1	Backstop Assembly (See Table)
TBD	2	Front Coile Anchor
TBD	1	Nose Assembly
B010202	TBD	Sliding Panel
B010659	2	End Panel
A501003	1	Slider Assembly Kit
B51-11622006-KIT	TBD	TAU-II-R Slider Kit
B51-1167131-KIT	TBD	TAU-II-R EAE Mounting Kit
B51-1012698-00	TBD	Energy Absorbing Element, Type 1
B51-1012670-00	TBD	Energy Absorbing Element, Type 2
B51-1012671-00	TBD	Energy Absorbing Element, Type 3
B51-1109042-00	TBD	Energy Absorbing Element, Type 1S
B51-1107116-00	TBD	Energy Absorbing Element, Type 2S
B51-1110009-00	TBD	Energy Absorbing Element, Type 3N
TBD	TBD	Coile Assembly
A501031	TBD	Letter(s) Support Kit
K001504	TBD	Coile Guide Kit
K001005	2	Front Support Leg Kit
TBD	1	Anchoring Package

(TBD) = To Be Determined, depending on Backup Type and System Lengths.
(See manufacturer's product manual for details)

Texas Department of Transportation
Design Division Standard

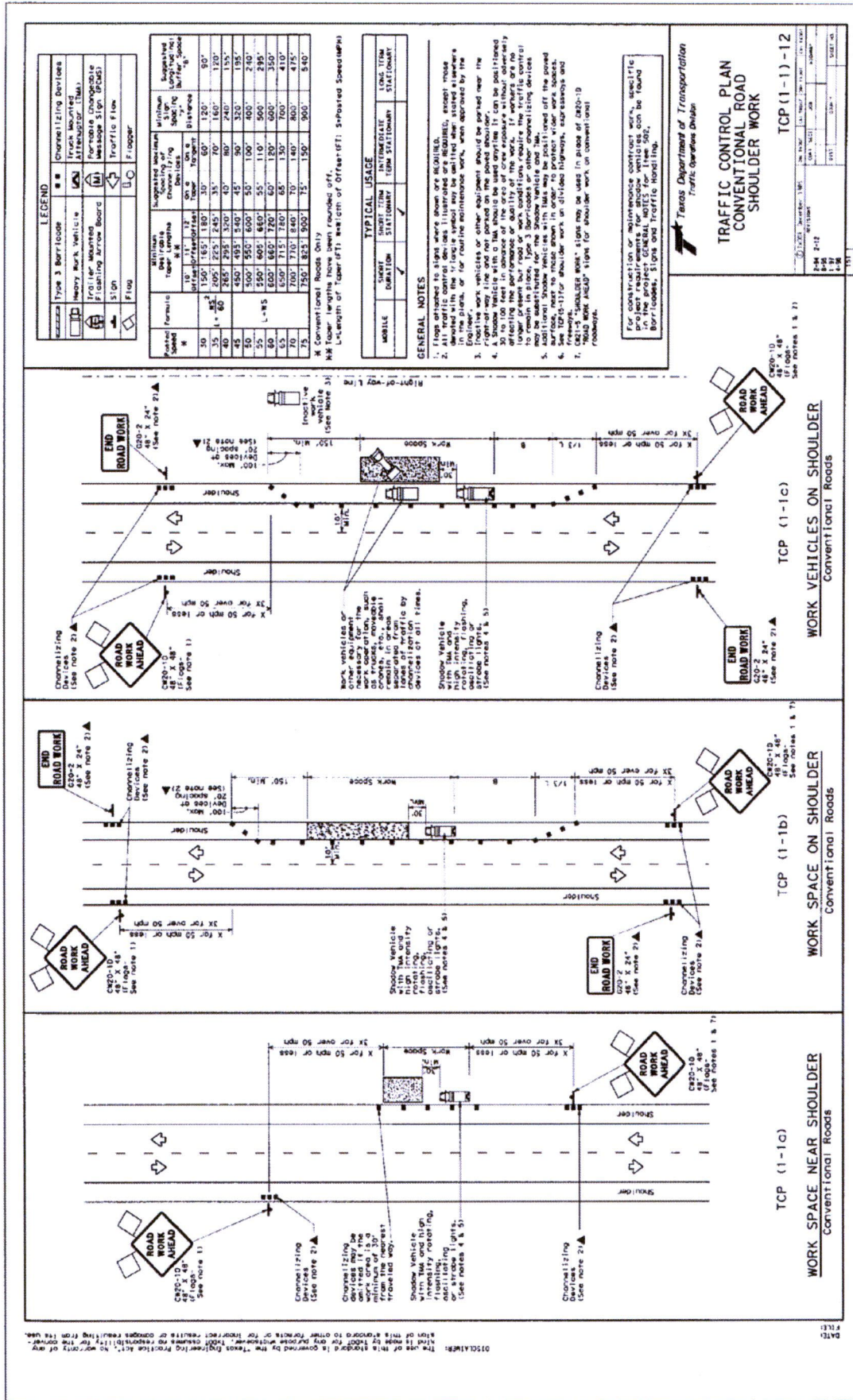
**LTS-BARRIER SYSTEMS
CRASH CUSHION
(R-WIDE)**

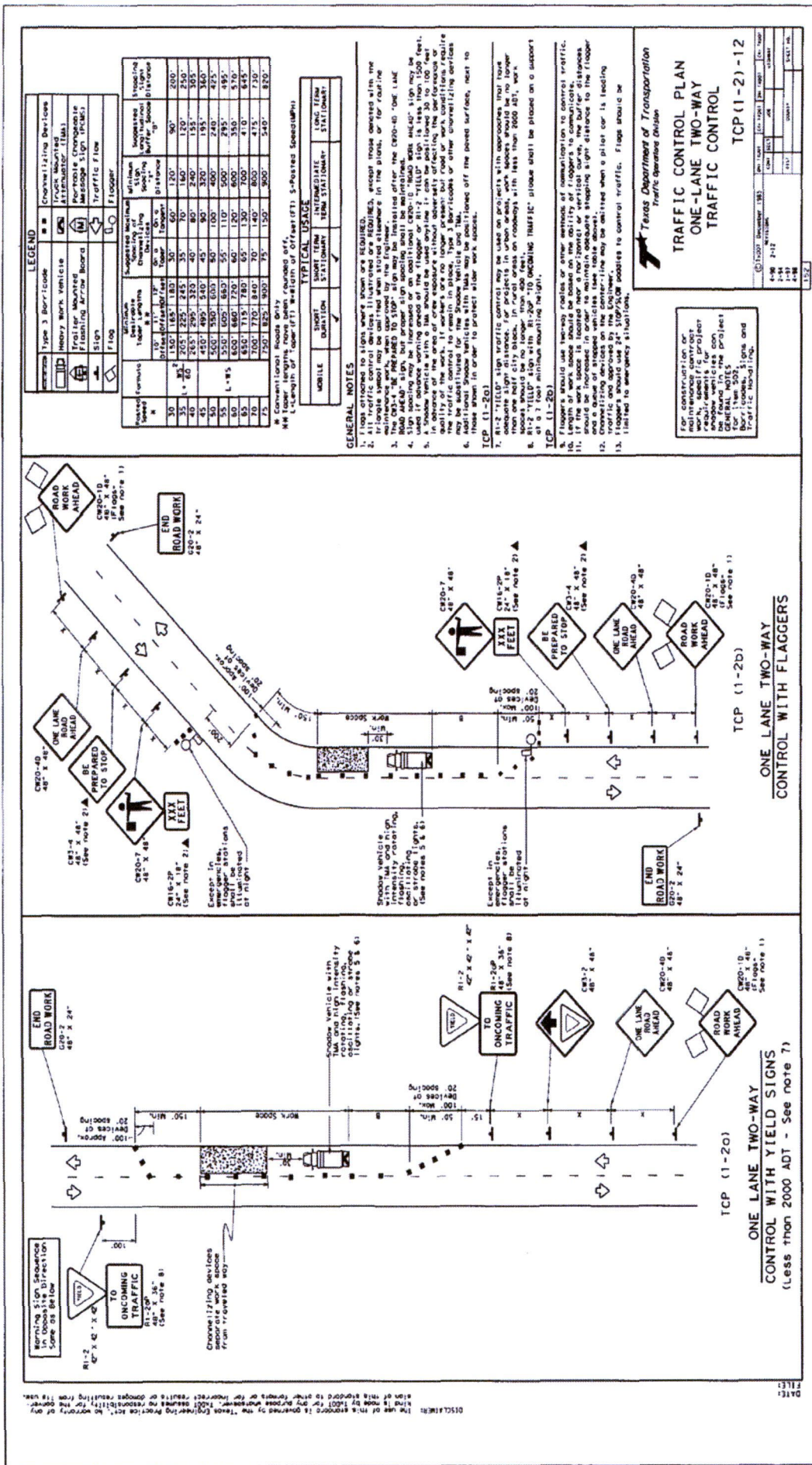
TAU-II-R(W) -16

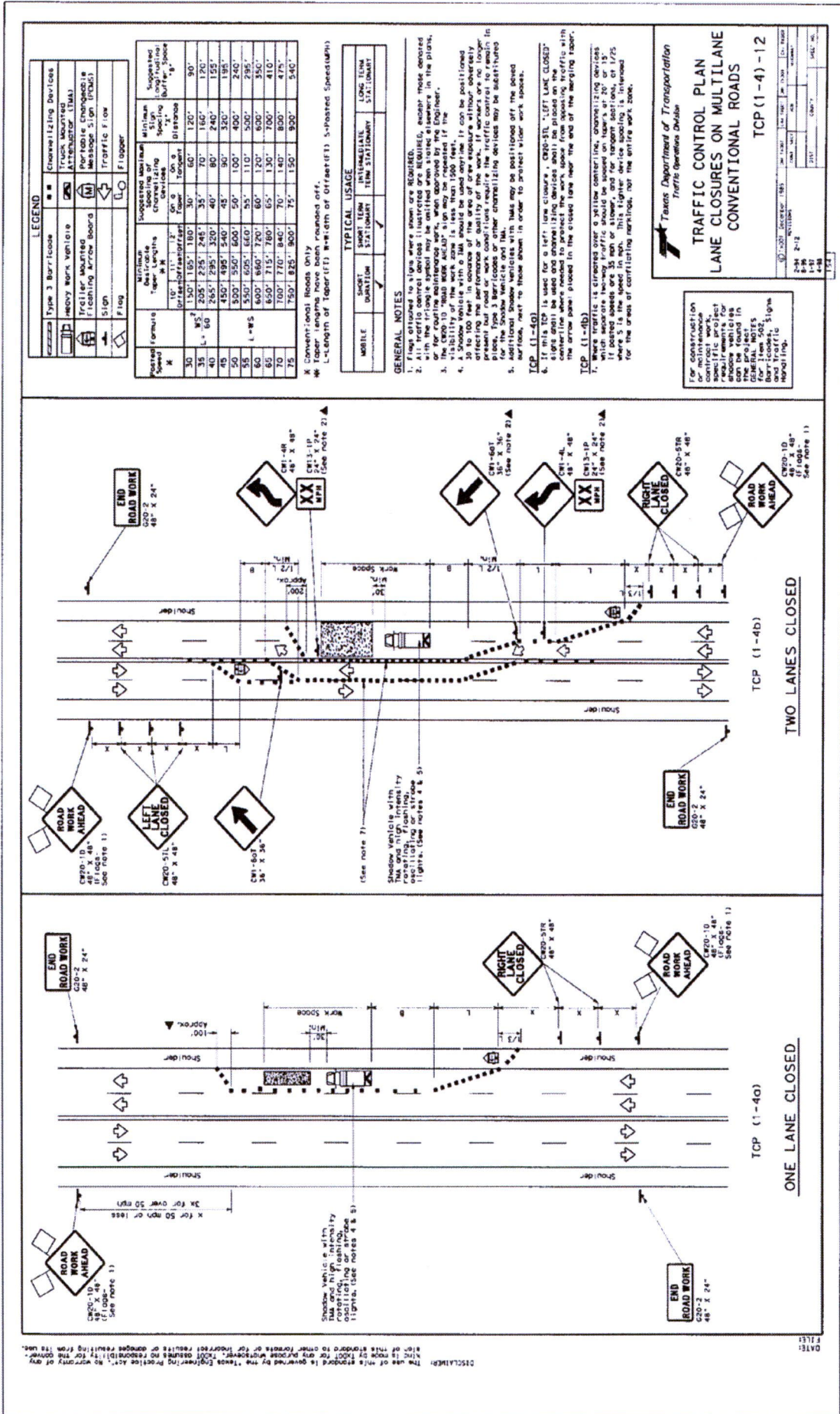
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DRAWN BY: J. B. BROWN
CHECKED BY: J. B. BROWN
SCALE: AS SHOWN
SHEET NO. 1 OF 1

LOW MAINTENANCE

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Texas Department of Transportation
Traffic Operations Division

**TRAFFIC CONTROL PLAN
LANE CLOSURES ON MULTILANE
CONVENTIONAL ROADS**

TCP (1-4) - 12

DATE: _____ FILE: _____

PROJECT: _____

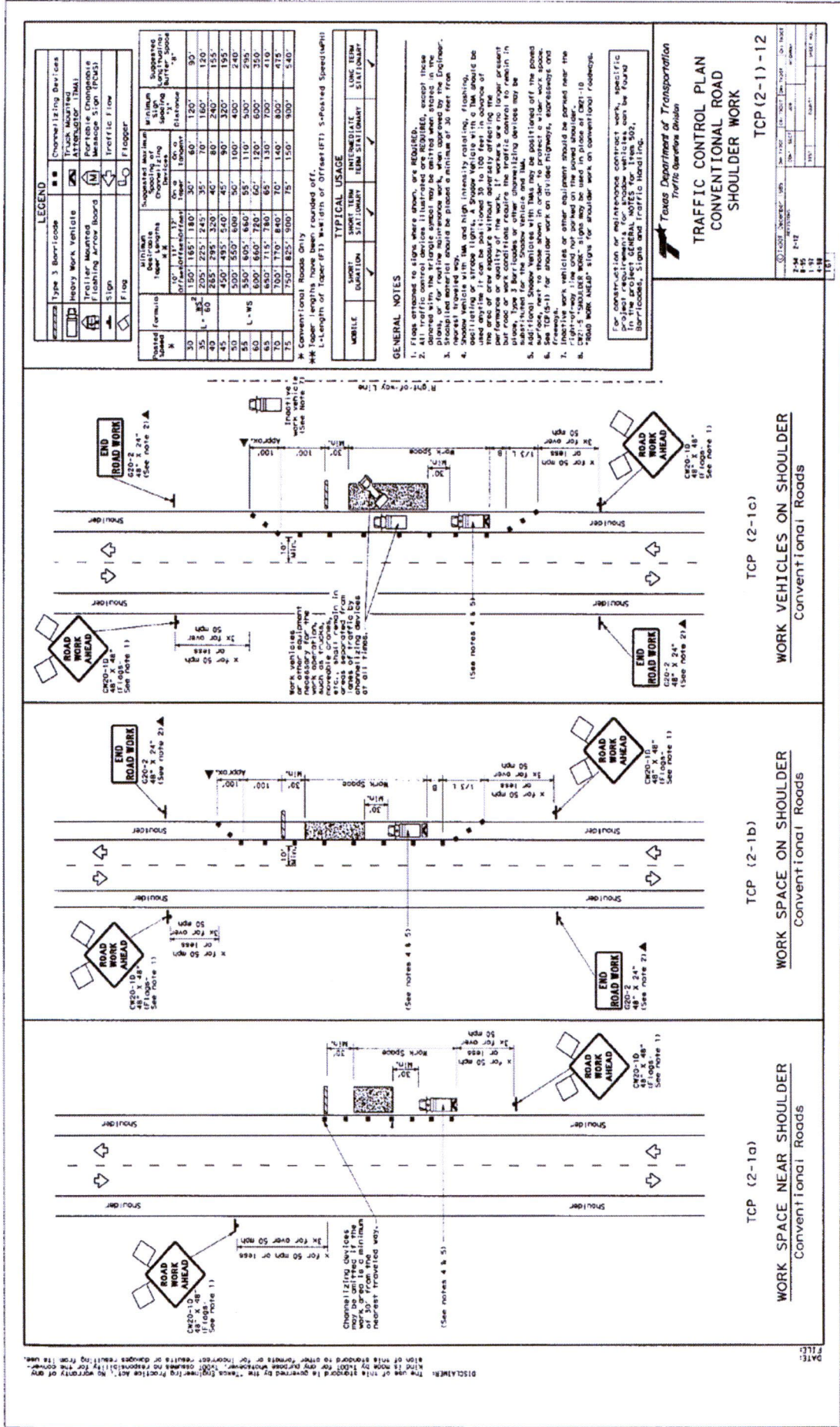
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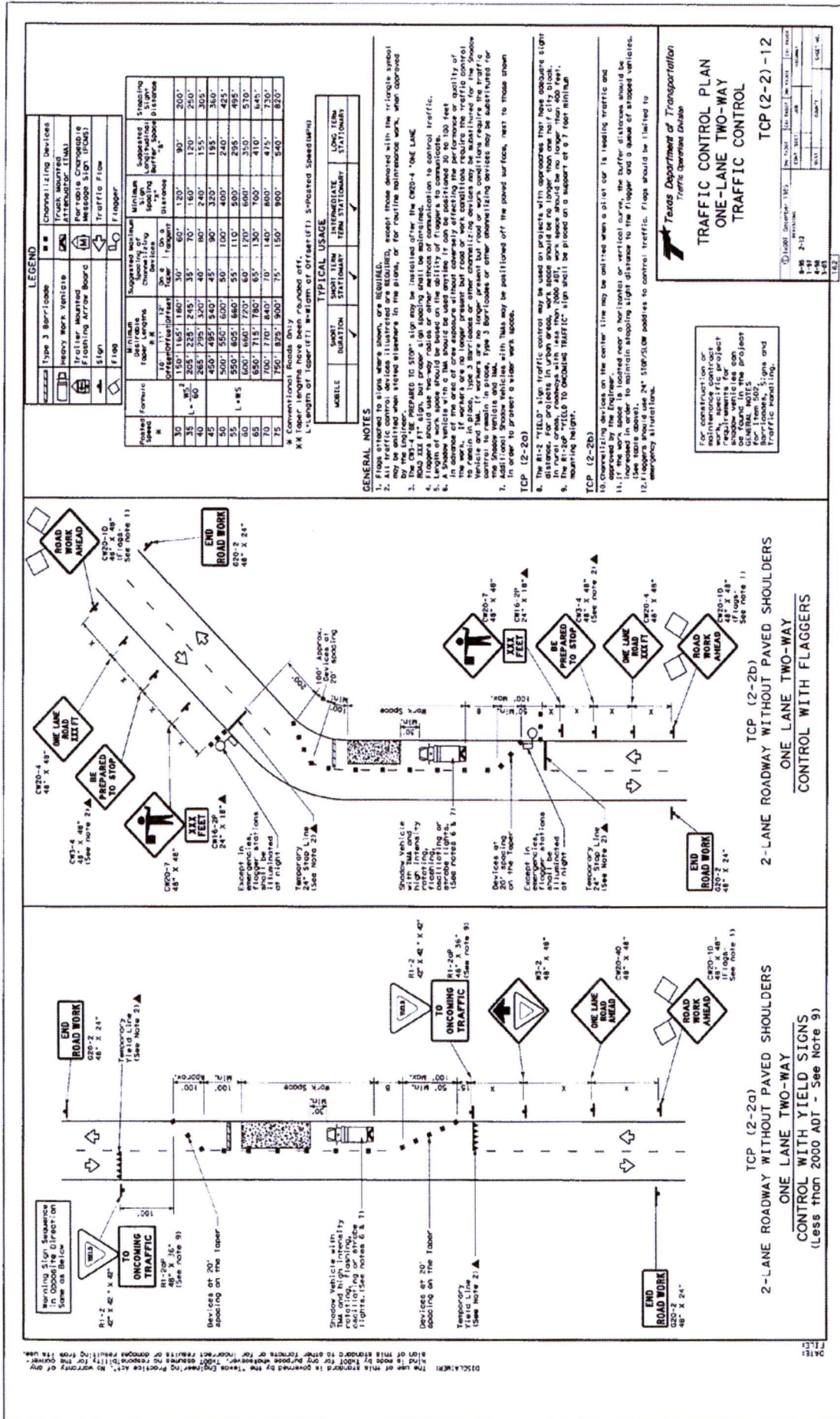
DESIGNED BY: _____

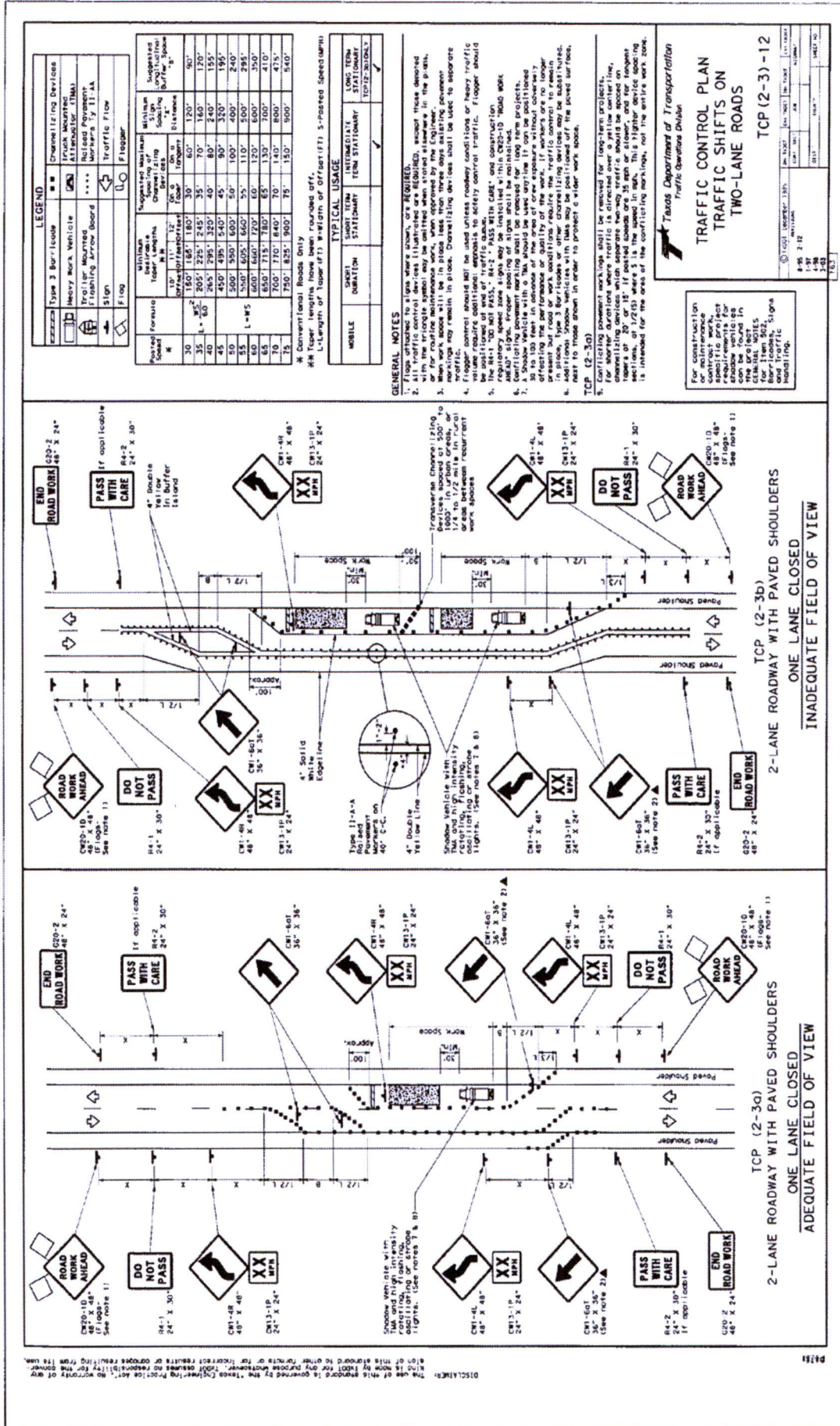
CHECKED BY: _____

APPROVED BY: _____

For construction and maintenance of a specific project, the following signs and equipment can be found in the GENERAL NOTES for Barricades, Signs and Traffic Handoffing.







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LEGEND

Symbol	Type 3 Barricade	Channelizing Devices
Symbol	Heavy Work Vehicle	Work Acquisition (W.A.)
Symbol	Trailer Mounted Floating Arrow Board	Revised Payment Workers by 11-1A
Symbol	Sign	Traffic Flow
Symbol	Flag	Flagger

TYPICAL USAGE

MOBILE	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
Symbol	Symbol	Symbol	Symbol

GENERAL NOTES

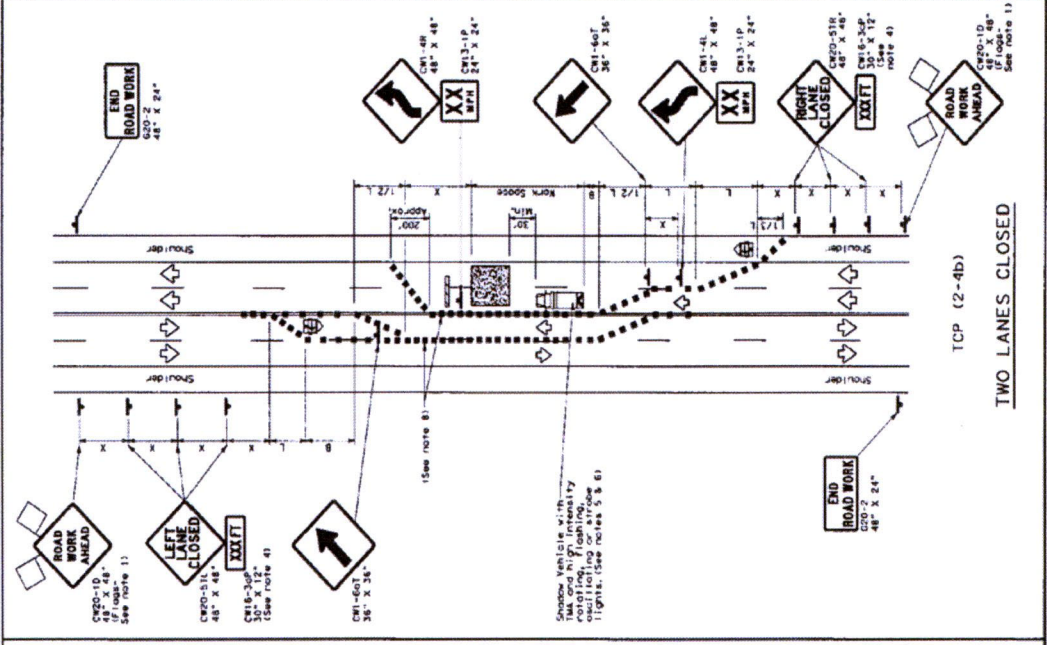
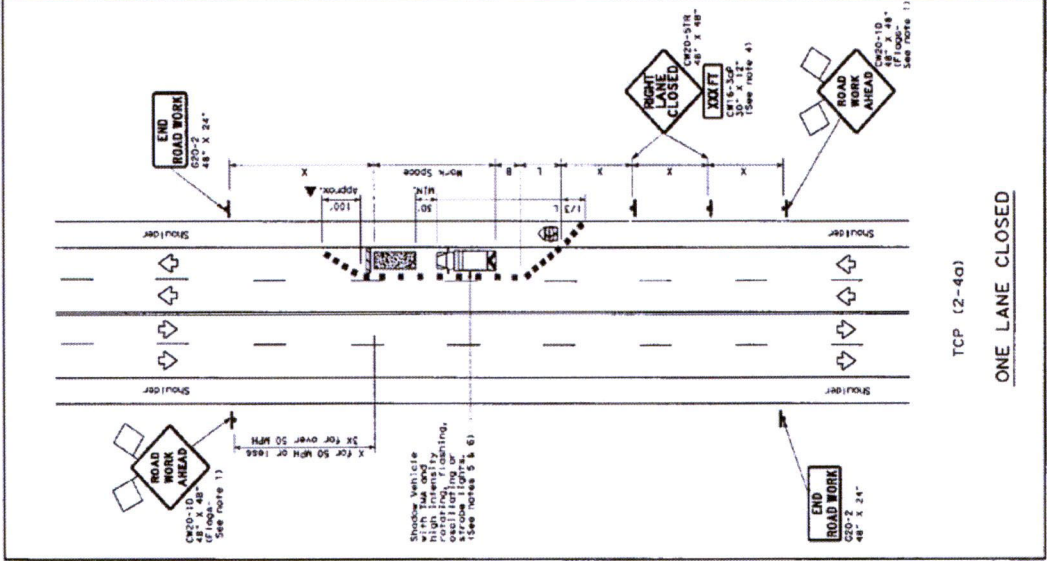
- Flaps attached to signs where shown, are REQUIRED.
- All traffic control devices (illustrated or required, except those denoted otherwise) shall be in place and in use from the beginning of the work zone to the end of the work zone.
- When work zone will be in place less than three days starting pavement traffic, may remain in place. Channelizing devices shall be used to separate traffic.
- Flagger control should not be used unless roadway conditions or heavy traffic require it. Flagger should be positioned at end of traffic queue. Safety control traffic. Flagger should be equipped with a "STOP" sign.
- The 8x11 "DO NOT PASS", 8x42 "PASS WITH CARE", and construction "ROAD WORK AHEAD" signs, proper spacing of signs shall be maintained.
- Channelizing devices (barrels, water-filled drums, etc.) shall be spaced 30 to 100 feet in advance of the work. If workers are no longer in the work zone, channelizing devices may be removed.
- Additional snowplow vehicles with this sign may be positioned off the paved surfaces, but must be shown in order to protect other work zones.

TCP (2-30) (continued)

For construction specific project traffic control plan, please refer to the project manual. The project manual shall include the following information:

- Project location, site plan, and aerial photos.
- Project description, including the location of the work zone.
- Project schedule, including the start and end dates of the work zone.
- Project budget, including the cost of the work zone.
- Project risk assessment, including the potential impacts of the work zone.
- Project communication plan, including the methods of communication with the public.
- Project safety plan, including the measures to be taken to ensure the safety of the work zone.

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LEGEND	
Type 3 Barricade	Channelizing Devices
Heavy Work Vehicle	Trucks, Motorcycles, ATVs, etc.
Trailer Mounted Flashing Arrow Board	Portable Changeable Message Sign (PCMS)
Sign	Flagger
Flag	Flagger

Posted Speed (mph)	Minimum Distance (ft)	Minimum Spacing (ft)	Minimum Spacing (ft) - 100 mph	Minimum Spacing (ft) - 80 mph	Minimum Spacing (ft) - 60 mph
35	150'	165'	180'	30'	40'
40	205'	225'	245'	35'	45'
45	265'	295'	320'	40'	50'
50	330'	365'	400'	45'	55'
55	405'	450'	495'	50'	60'
60	495'	555'	615'	55'	65'
65	600'	675'	750'	60'	70'
70	720'	810'	900'	65'	75'
75	855'	960'	1065'	70'	80'
80	1005'	1125'	1245'	75'	85'
85	1170'	1305'	1435'	80'	90'
90	1350'	1500'	1650'	85'	95'
95	1545'	1710'	1885'	90'	100'
100	1755'	1935'	2130'	95'	105'

GENERAL NOTES

- Flagger attached to sign when shown, are REQUIRED.
- All traffic control devices illustrated are REQUIRED, except those denoted as optional. The use of optional devices is at the discretion of the contractor or for routine maintenance work, when approved by the Engineer.
- For the downstream taper is optional. When used, it should be 100 feet minimum.
- For short term applications, when both required signs are not used, the distance tapered may be shown on the sign face rather than on a CR16-30F supplemental sign.
- A Snow Vehicle with a TM should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work zone. The use of snow vehicles is at the discretion of the contractor or other channelizing devices may be substituted for the Snow Vehicle.
- Mobile and Snow Vehicles with TMs may be positioned in each closed lane, on the shoulder or off the closed roadway, next to those shown in order to protect a wider work space.

TYPICAL USAGE

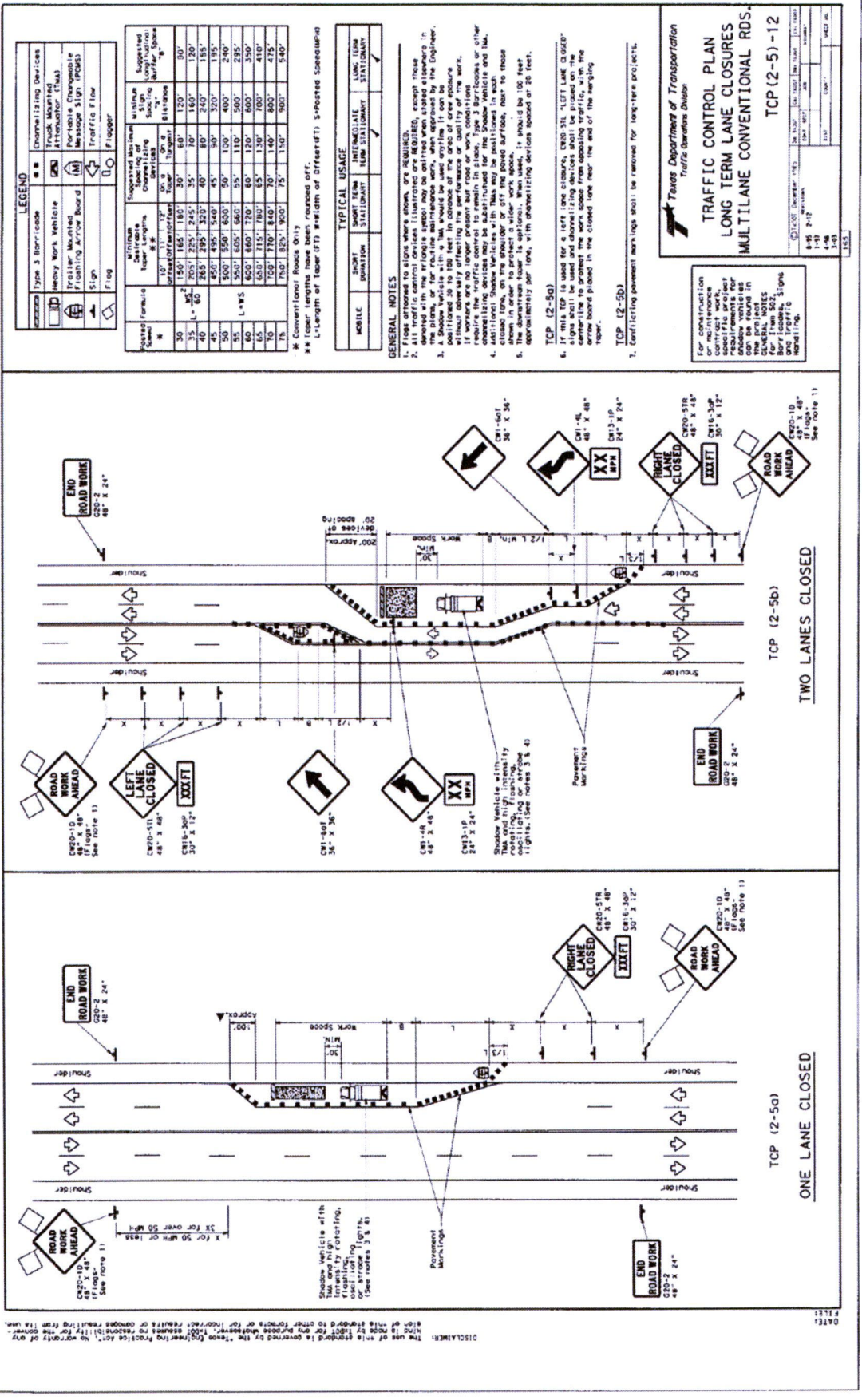
MOBILE STATION	SHORT TERM STATION	INTERMEDIATE STATION	LONG TERM STATION
✓	✓	✓	✓

TCP (2-4b)

- If this TCP is used for a left lane closure, CR20-51L, LEFT LANE CLOSED signs should be placed in the work zone to protect the work space from opposing traffic with the arrow board placed in the closed lane near the end of the tapering taper.
- TCP (2-4b)**
- For shorter applications where traffic is directed over a yellow centerline, CR20-51R, RIGHT LANE CLOSED signs should be placed in the work zone at 20' or 15' if posted speeds are 35 mph or lower, and for tangent sections, or 1/2 S where S is the speed in mph. This taper device spacing is intended for the area of conflicting traffic, not the entire work zone.

TCP (2-4a)

- For construction contract work, CR20-10, ROAD WORK AHEAD signs should be placed in the work zone in advance of the project.
- GENERAL NOTES**
- Signs should be placed in the work zone in advance of the project.
- Signs should be placed in the work zone in advance of the project.

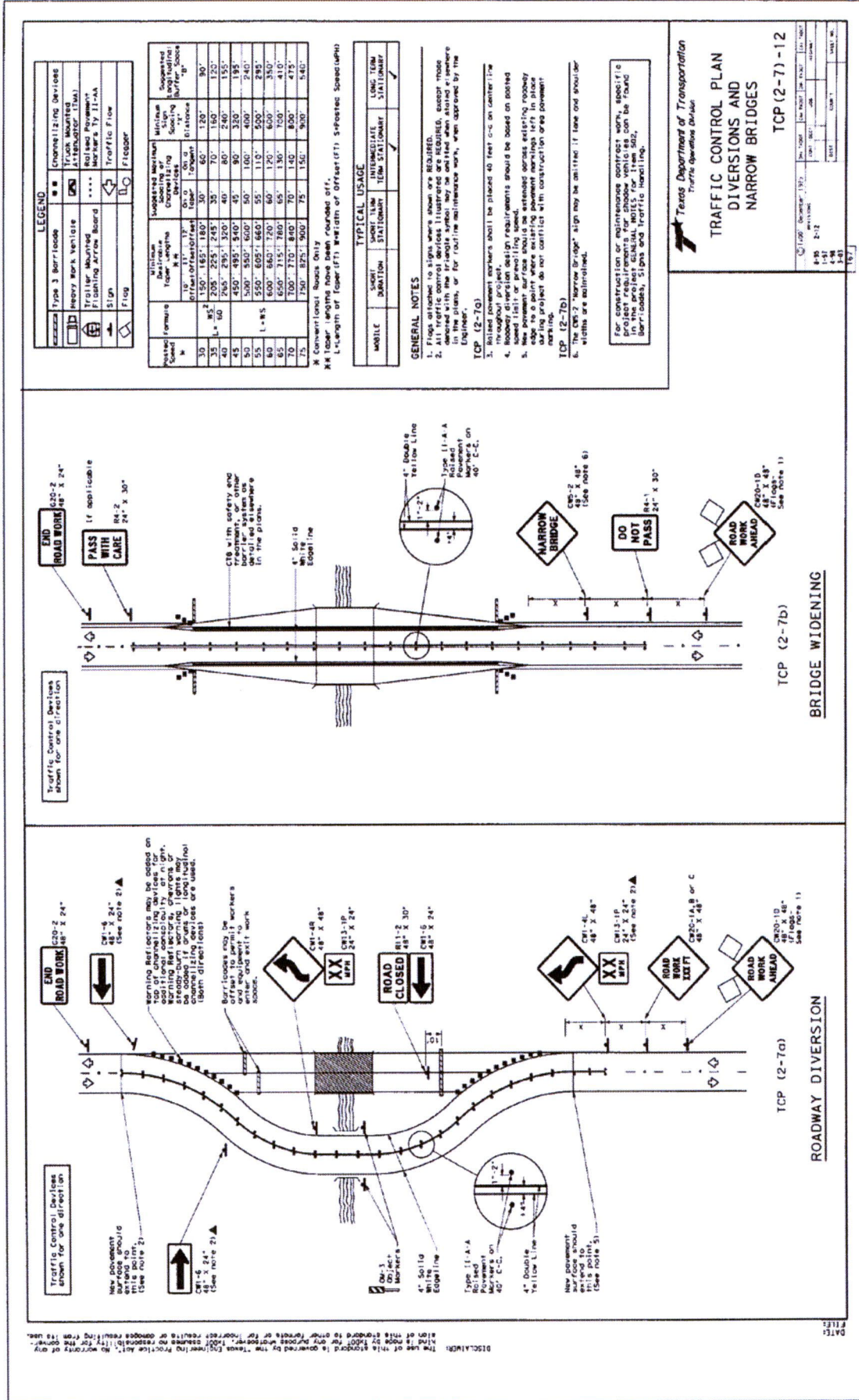


Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN
LONG TERM LANE CLOSURES
MULTILANE CONVENTIONAL RDS.

TCP (2-5) - 12

DATE	12/10/01	REVISION	1	BY	W. J. [Signature]	CHKD BY	[Signature]
DATE	1-17	REVISION	2	BY	[Signature]	CHKD BY	[Signature]
DATE	4-18	REVISION	3	BY	[Signature]	CHKD BY	[Signature]
DATE	1-13	REVISION	4	BY	[Signature]	CHKD BY	[Signature]



LEGEND

Type 3 Barricade	Channelizing Devices
Sign	Traffic Flow
Flag	Flagger
Work Zone	For Table
Work Zone	Traffic Signal

Posted Advance Speed	Minimum Advance Time (min)	Minimum Advance Distance (ft)	Sign Type	Sign Size	Sign Spacing (ft)	Sign Placement	Sign Color	Sign Text	Sign Spacing (ft)	Sign Placement	Sign Color	Sign Text	Sign Spacing (ft)	Sign Placement	Sign Color	Sign Text	
30	150	165	180	30"	60"	120"	90"	200'									
40	205	225	245	35"	70"	140"	120"	230'									
45	250	275	300	40"	80"	160"	135"	260'									
50	300	330	360	45"	90"	180"	150"	290'									
55	350	390	420	50"	100"	200"	165"	320'									
60	400	440	480	55"	110"	220"	180"	350'									
65	450	495	540	60"	120"	240"	200"	380'									
70	500	550	600	65"	130"	260"	220"	410'									
75	550	605	660	70"	140"	280"	240"	440'									

TYPICAL USAGE

MOBILE	SHORT TERM	INTERMEDIATE	LONG TERM
Station	Station	Station	Station
Station	Station	Station	Station

GENERAL NOTES

1. Signs shall be placed in the work zone as shown on this plan.
2. A 4' x 48" "DO NOT PASS" sign should be placed at the entrance to the work zone.
3. A 4' x 48" "ROAD AHEAD" sign should be placed at the entrance to the work zone.
4. For alternate signs, the authorization must be placed 40 feet 6" on center-line between the signs.
5. For alternate signs, the authorization must be placed 40 feet 6" on center-line between the signs.
6. For alternate signs, the authorization must be placed 40 feet 6" on center-line between the signs.
7. For alternate signs, the authorization must be placed 40 feet 6" on center-line between the signs.
8. For alternate signs, the authorization must be placed 40 feet 6" on center-line between the signs.
9. For alternate signs, the authorization must be placed 40 feet 6" on center-line between the signs.
10. For alternate signs, the authorization must be placed 40 feet 6" on center-line between the signs.

TCP (2-8a) ONE LANE TWO-WAY TRAFFIC CONTROL WITH YIELD SIGNS (Less Than 2000 ADT-See Note 5)

TCP (2-8b) ONE LANE TWO-WAY TRAFFIC CONTROL WITH TRAFFIC SIGNAL

TCP (2-8) - 12

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN
LONG TERM ONE-LANE
TWO-WAY CONTROL

DATE: _____
DRAWN BY: _____
CHECKED BY: _____
APPROVED BY: _____

LEGEND		ARROW BOARD DISPLAY
●	Trail Vehicle	
◆◆	Shadow Vehicle	
◆◆◆	Work Vehicle	RIGHT Directional
◆◆◆◆	Heavy Work Vehicle	LEFT Directional
◆◆◆◆◆	Truck Mounted Attenuator (TMA)	Double Arrow
◆◆◆◆◆◆	Traffic Flow	CAUTION (Interlocking Diamonds or 4-Corner Flash)

TYPICAL USAGE	
MOBILE	SHORT TERM STATIONARY
INTERMEDIATE	LONG TERM STATIONARY

GENERAL NOTES

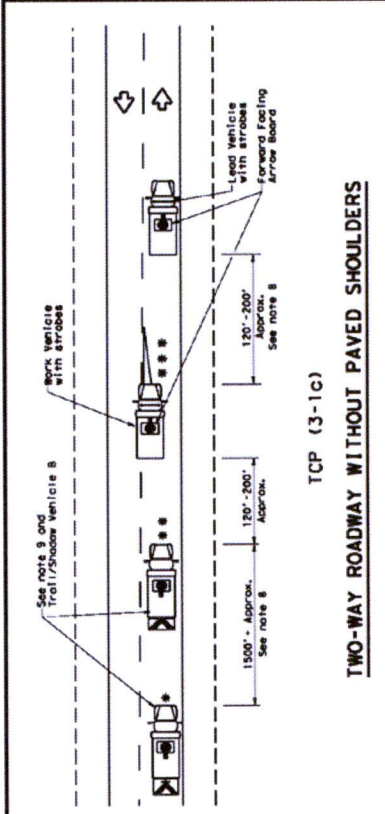
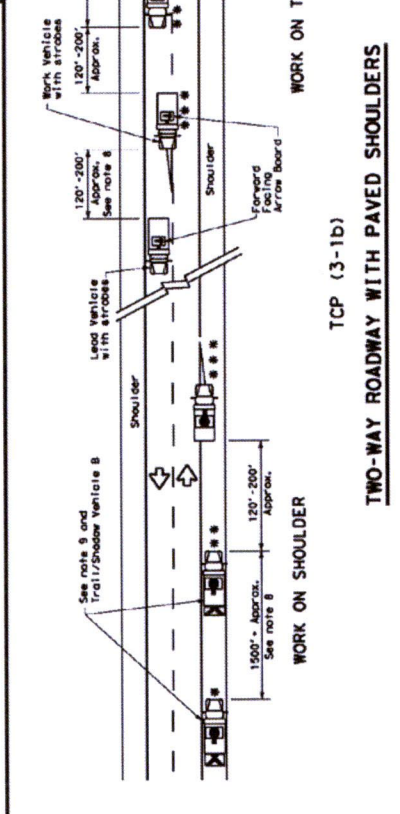
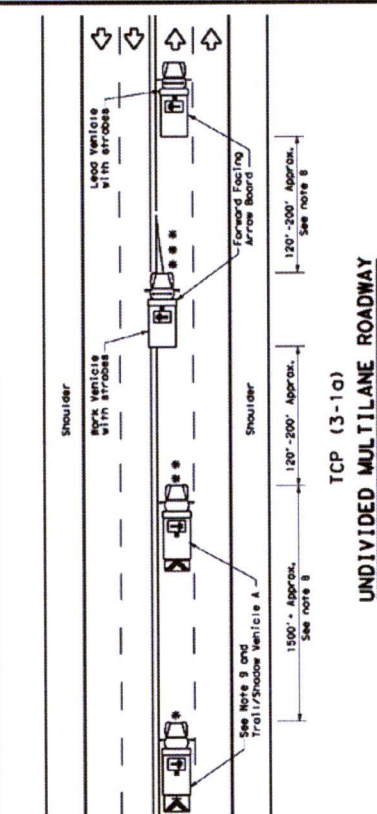
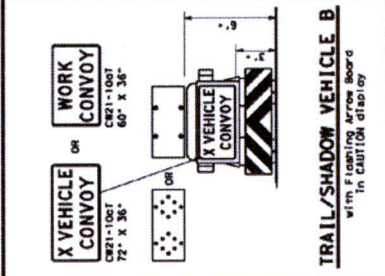
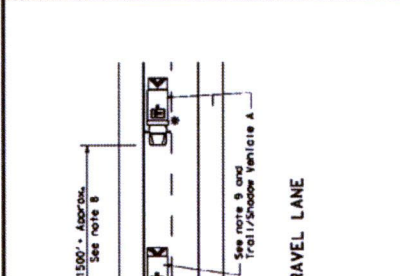
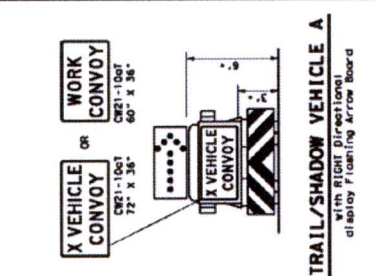
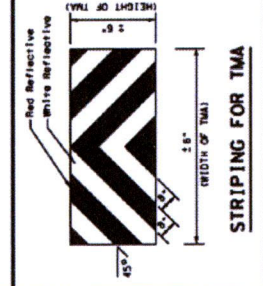
1. TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated. When a LEAD vehicle is not used the work vehicle must be equipped with a TRAIL vehicle. A TRAIL VEHICLE shall be used in all situations where TRAIL VEHICLE was required based on prevailing roadway conditions, traffic volume, and sight distance restrictions.
2. The use of amber high intensity rotating, flashing, oscillating, or strobe lights or strobe lights mounted on the driver's side of the vehicle may be coordinated simultaneously with the amber beacons or strobe lights.
3. The use of truck mounted attenuators (TMA) on the SHADOW VEHICLE and TRAIL VEHICLE are required.
4. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL SPECIFICATION SMS 8300, Type A.
5. Flashing arrow boards shall be Type B or Type C as per the Barriobac and Construction (BAC) standards. The board shall be controlled from inside the vehicle.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to shadow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the work convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes as they approach the work area. The TRAIL VEHICLE and SHADOW VEHICLE and LEAD VEHICLE may vary according to terrain, work activity and other factors.
9. "X VEHICLE CONVOY" (CE21-10A1) or "WORK CONVOY" (CE21-10A7) signs shall be used on two-lane two-way roadways. The work and protection vehicles should pull over periodically to allow motor vehicle traffic to pass. If motor-ists are not allowed to pass the work convoy, a "DO NOT PASS" (R4-1) sign should be placed on the back of the rear-most protection vehicle.

Texas Department of Transportation
Traffic Operations Summary

**TRAFFIC CONTROL PLAN
MOBILE OPERATIONS
UNDIVIDED HIGHWAYS**

TCP (3-1) - 13

REV. 10/01 1.0-1
REV. 10/01 1.0-2
REV. 10/01 1.0-3
REV. 10/01 1.0-4
REV. 10/01 1.0-5
REV. 10/01 1.0-6
REV. 10/01 1.0-7
REV. 10/01 1.0-8
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REV. 10/01 1.0-10
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REV. 10/01 1.0-100



DATE: 11/13/11
DRAWN: [Name]
CHECKED: [Name]
APPROVED: [Name]
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LEGEND	
* Trail Vehicle	ARROW BOARD DISPLAY
** Shadow Vehicle	
*** Work Vehicle	RIGHT Directional
**** Heavy Work Vehicle	LEFT Directional
***** Truck Mounted Attenuator (TMA)	Double Arrow
***** Traffic Flow	CAUTION Alternating Diamond or a Corner Flasher

TYPICAL USAGE	
MOBILE	SHOOT LIGHTS
STATIONARY	SHOOT LIGHTS
STATIONARY	SHOOT LIGHTS
STATIONARY	SHOOT LIGHTS

GENERAL NOTES

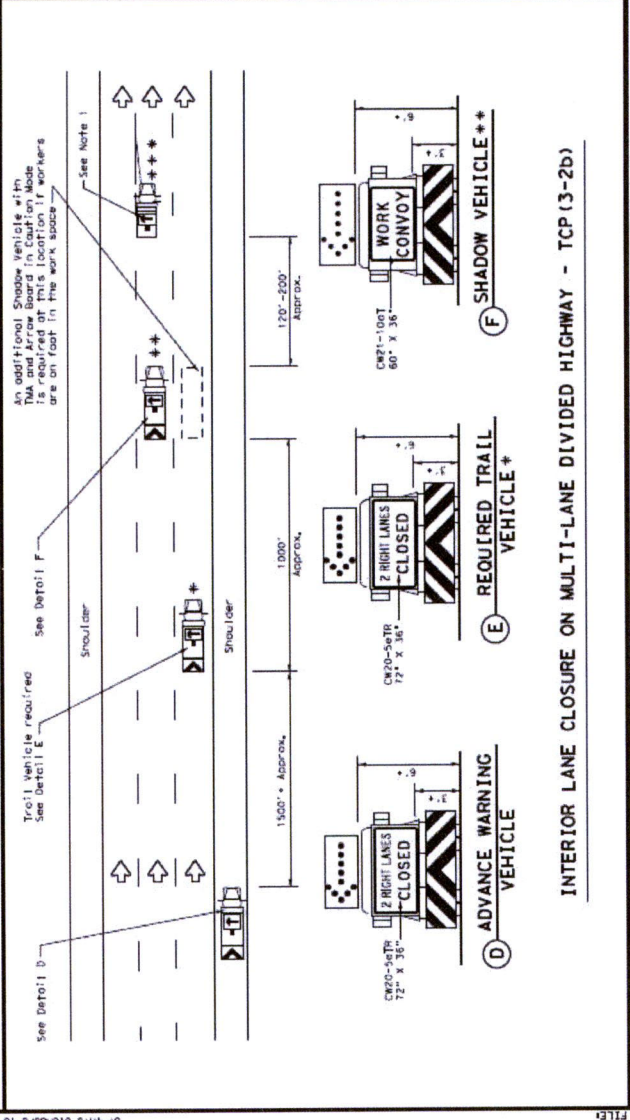
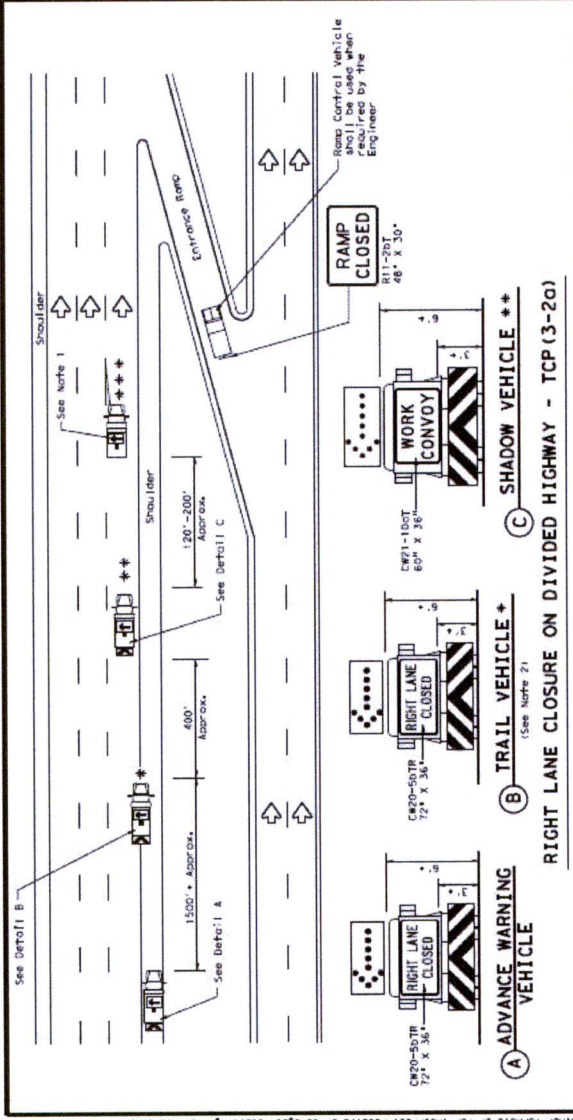
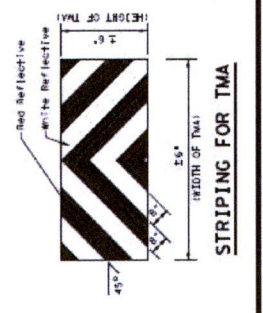
1. ADVANCE WARNING, TRAIL, and SHADOW vehicles shall be equipped with Type B or Type C flashing arrow boards as per the Barricade and Construction (BC) standards. Arrow boards on WORK vehicles will be optional based on the type of work being performed. The arrow boards shall be operated from inside the vehicle.
2. For TCP(3-2b) the Engineer will determine if the TRAIL VEHICLE is required based on prevailing roadway conditions. Minimum volume and light distance restrictions. All other vehicles shown for both TCP(3-2a) and TCP(3-2b) are required.
3. The use of amber high intensity rotating, flashing, oscillating, or strobe lights or strobe lights mounted on the driver's side of the vehicle may be operated simultaneously with the amber beacons or strobe lights.
4. The use of truck mounted attenuators (TMA) on the ADVANCE WARNING, SHADOW, and TRAIL vehicles are required.
5. Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of MMS 8300, Type A.
6. Each vehicle shall have two-way radio communication capability.
7. When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to allow the other convoy vehicles.
8. Vehicle spacing between the TRAIL VEHICLE and the SHADOW VEHICLE will vary depending on the length of the work zone. The TRAIL VEHICLE should change lanes as they approach the TRAIL VEHICLE. Vehicle spacing between the WORK VEHICLE and SHADOW VEHICLE may vary according to terrain, work activity and other factors.
9. Standard 48" x 48" diamond shaped warning signs with the same message as those shown may be used where adequate mounting space exists.
10. The signs shown should be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (POMS) or a truck mounted changeable sign (TMCS) with a minimum character height of 12", and displaying the same legend may be substituted for the signs shown. The POMS or TMCS shall be displayed simultaneously with the POMS/TMCS message. When this is done, the arrow board will not be required on the Advance Warning Vehicle.
11. Standard diamond shape variations of the RMO-5 series signs may be used as an option if the rectangular signs shown are not available.
12. The portability of this sheet may be used to close lanes from the left side of the roadway considering the number of lanes, shoulder width, sight distance, and ramp frequency.
13. Signs and flashing arrow boards shall be appropriately offset when implementing left lane closures or interior closures which close the left lanes.
14. The Advance Warning Vehicle may straddle the edge line when shoulder width makes it necessary.

Texas Department of Transportation
Traffic Control Division
Standard

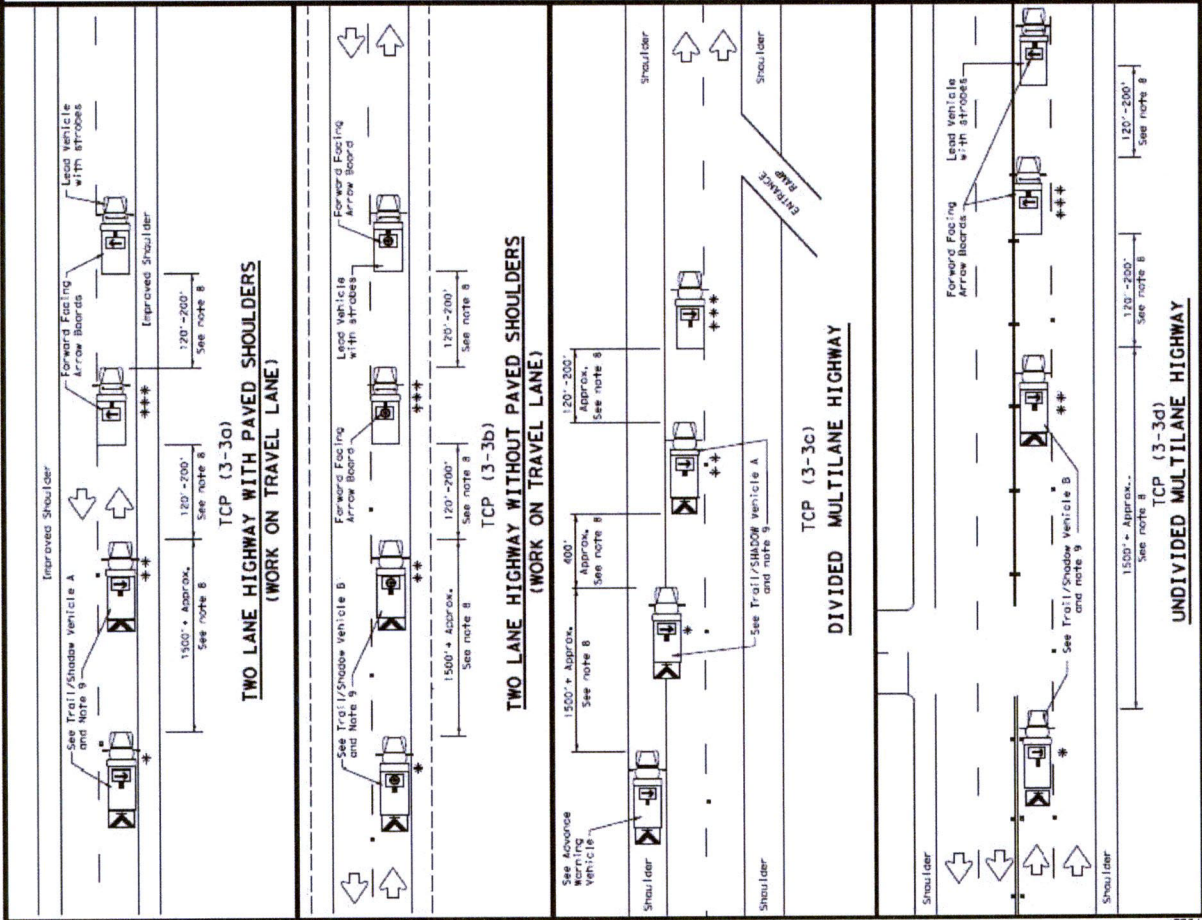
**TRAFFIC CONTROL PLAN
MOBILE OPERATIONS
DIVIDED HIGHWAYS**

TCP (3-2) - 13

DATE	10/23/2010	BY	10/23/2010
PROJECT	10/23/2010	DATE	10/23/2010
FILE	10/23/2010	DATE	10/23/2010
DATE	10/23/2010	DATE	10/23/2010



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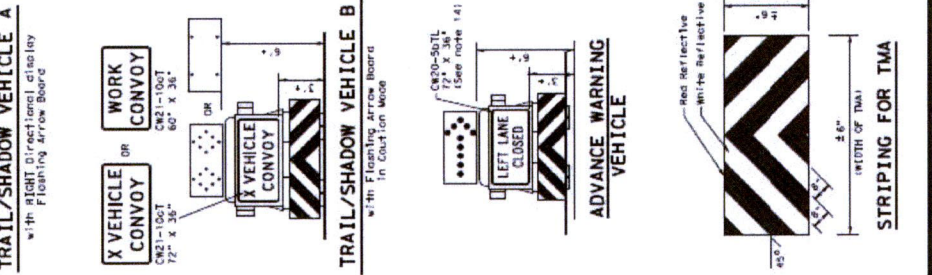
LEGEND

Trail Vehicle	ARROW BOARD DISPLAY
Shadow Vehicle	RIGHT Directional
Work Vehicle	LEFT Directional
Heavy Work Vehicle	Double Arrow
Truck Mounted Attenuator (TMA)	CAUTION (Warning) Display or 4 Corner Flash
Traffic Flow	

TYPICAL USAGE	
SHORT DURATION	SHORT TERM INTERMEDIATE
STATIONARY	STATIONARY
VEHICLE	LONG TERM
7	STATIONARY

GENERAL NOTES

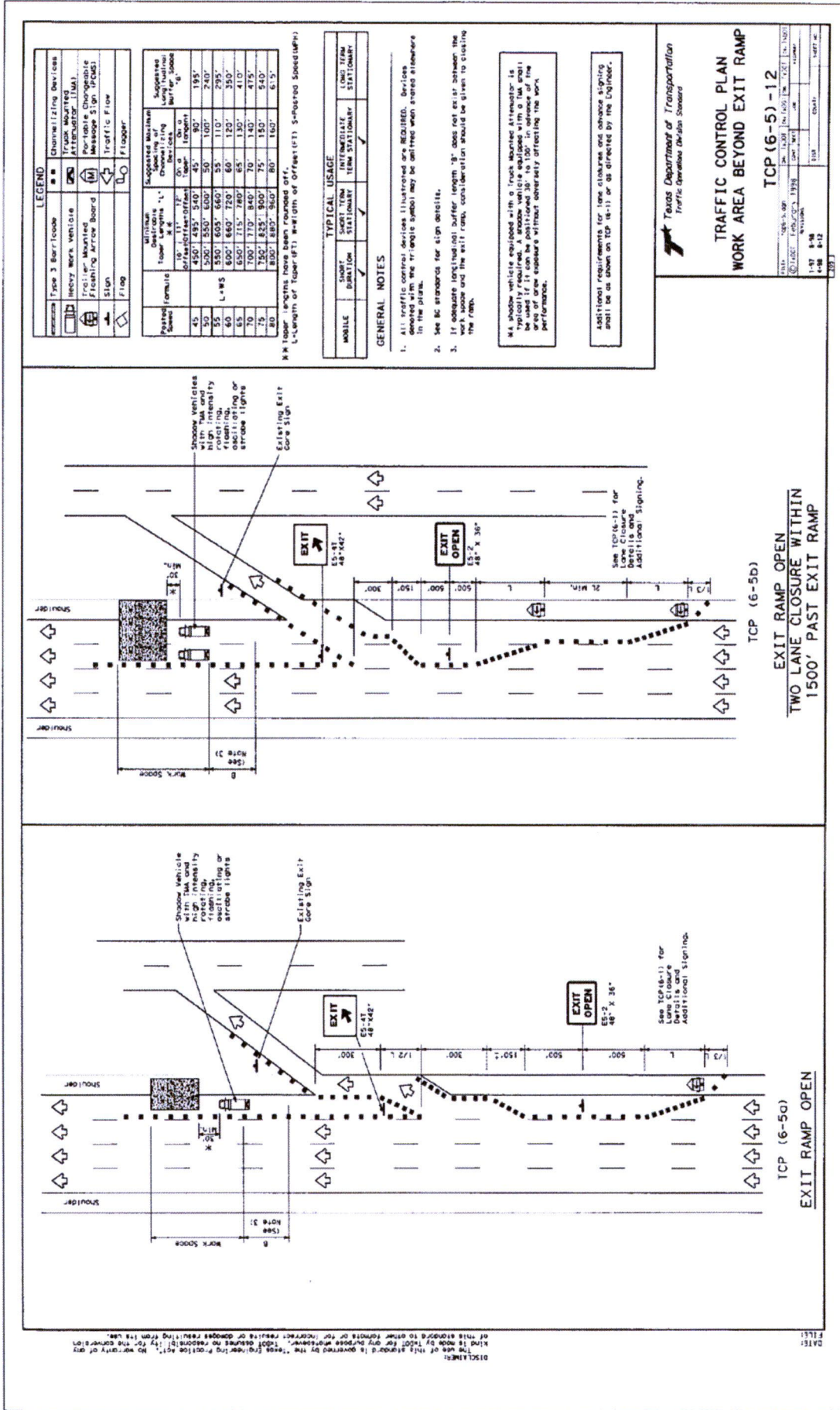
- TRAIL, SHADOW, and LEAD vehicles shall be equipped with arrow boards as illustrated, when a LEAD vehicle is not used on two-way roads the WORK vehicle must have an arrow board. For divided highways, the arrow board on the work vehicle is controlled on the type work being performed. The Engineer shall determine the appropriate flashing sequence for the work vehicle while traveling roadway conditions, traffic volume, and sight distance restrictions. The use of amber high intensity rotating, flashing, oscillating, or strobe lights shall be used on the work vehicle. The use of red high intensity rotating or strobe lights when mounted on the driver's side of the vehicle may be operated simultaneously with the amber sections or strobe lights.
- TRAIL VEHICLES shall be equipped with TMA on the SHADOW VEHICLE, ADVANCE WARNING and color requirements of DEPARTMENTAL SPECIFICATION.
- Reflective sheeting on the rear of the TMA shall meet or exceed the reflectivity and color requirements of DEPARTMENTAL SPECIFICATION.
- Flashing arrow boards shall be Type B or Type C as per the barricade and Construction (BC) standards. The board shall be controlled from inside the vehicle.
- Each vehicle shall have two-way radio communication capability.
- When work convoys must change lanes, the TRAIL VEHICLE should change lanes first to provide the other arrow board vehicles.
- TRAIL VEHICLES shall be equipped with TMA on the SHADOW VEHICLE will vary depending on sight distance restrictions. Motorists approaching the convoy should be able to see the TRAIL VEHICLE in time to slow down and/or change lanes. The TRAIL VEHICLE shall be equipped with TMA on the SHADOW VEHICLE and SHADOW VEHICLE and vehicle spacing between WORK VEHICLE and LEAD VEHICLE may vary according to terrain, work activity, and other factors.
- TRAIL VEHICLES and SHADOW VEHICLES (CR21-100T) signs shall be used on shaped WORK CONVOY (CR21-10T) or X VEHICLE CONVOY (CR21-100T) signs may be used where adequate mounting space exists. When used, the X VEHICLE CONVOY shall be used in conjunction with the TRAIL VEHICLE. The X VEHICLE CONVOY shall not be used on the SHADOW VEHICLE if a TRAIL VEHICLE is used.
- LEFT LANE CLOSED (AHEAD) SIGN (CR20-50T) shall be used on the SHADOW VEHICLE. LEFT LANE CLOSED (AHEAD) SIGN (CR20-50T) shall be used on the Advance Warning Vehicle. As an option, a portable changeable message sign (PCMS) or truck-mounted changeable message sign (TMCMSS) may be used on the Advance Warning Vehicle. Some legends may be substituted for these signs. An appropriate directional arrow display, indicating the size and legibility of the flashing arrow board may be used on the Advance Warning Vehicle. The flashing arrow board may be used on the Advance Warning Vehicle. The flashing arrow board shall not be displayed on the Advance Warning Vehicle.
- A double arrow shall not be displayed on the Advance Warning Vehicle.
- On two-way roadways, the work and protection vehicles should pull over and remain stationary until the work vehicle is safely past. If motorists are not allowed to pass the work protection vehicle DO NOT PASS (R4-1) sign should be placed on the back of the rear most protection vehicle.



Texas Department of Transportation

TRAFFIC CONTROL PLAN
MOBILE OPERATIONS
RAISED PAVEMENT
MARKER INSTALLATION/REMOVAL
TCP (3-3) - 14

DATE	PROJECT	CONTRACT	COUNTY	SHEET NO.
10/23/2007	Interchange 187			117
2004 4-28	SECTION			
8-16 1-11				
10/23/2007				



LEGEND

Channelizing Devices	Channelizing Devices
Heavy Work Vehicle Attenuator (HWA)	Portable Changeable Message Sign (PCMS)
Trailer Mounted Flashing Arrow Board	Traffic Flow
Sign	Flagger
Flare	

Recommended Message Length (ft)	Recommended Message Length (ft)	Recommended Message Length (ft)
45	450	485
50	500	540
55	550	600
60	600	660
65	650	720
70	700	780
75	750	840
80	800	900
85	850	960
90	900	1020
95	950	1080
100	1000	1140
105	1050	1200
110	1100	1260
115	1150	1320
120	1200	1380
125	1250	1440
130	1300	1500
135	1350	1560
140	1400	1620
145	1450	1680
150	1500	1740
155	1550	1800
160	1600	1860
165	1650	1920
170	1700	1980
175	1750	2040
180	1800	2100
185	1850	2160
190	1900	2220
195	1950	2280
200	2000	2340
205	2050	2400
210	2100	2460
215	2150	2520
220	2200	2580
225	2250	2640
230	2300	2700
235	2350	2760
240	2400	2820
245	2450	2880
250	2500	2940
255	2550	3000
260	2600	3060
265	2650	3120
270	2700	3180
275	2750	3240
280	2800	3300
285	2850	3360
290	2900	3420
295	2950	3480
300	3000	3540
305	3050	3600
310	3100	3660
315	3150	3720
320	3200	3780
325	3250	3840
330	3300	3900
335	3350	3960
340	3400	4020
345	3450	4080
350	3500	4140
355	3550	4200
360	3600	4260
365	3650	4320
370	3700	4380
375	3750	4440
380	3800	4500
385	3850	4560
390	3900	4620
395	3950	4680
400	4000	4740
405	4050	4800
410	4100	4860
415	4150	4920
420	4200	4980
425	4250	5040
430	4300	5100
435	4350	5160
440	4400	5220
445	4450	5280
450	4500	5340
455	4550	5400
460	4600	5460
465	4650	5520
470	4700	5580
475	4750	5640
480	4800	5700
485	4850	5760
490	4900	5820
495	4950	5880
500	5000	5940
505	5050	6000
510	5100	6060
515	5150	6120
520	5200	6180
525	5250	6240
530	5300	6300
535	5350	6360
540	5400	6420
545	5450	6480
550	5500	6540
555	5550	6600
560	5600	6660
565	5650	6720
570	5700	6780
575	5750	6840
580	5800	6900
585	5850	6960
590	5900	7020
595	5950	7080
600	6000	7140
605	6050	7200
610	6100	7260
615	6150	7320
620	6200	7380
625	6250	7440
630	6300	7500
635	6350	7560
640	6400	7620
645	6450	7680
650	6500	7740
655	6550	7800
660	6600	7860
665	6650	7920
670	6700	7980
675	6750	8040
680	6800	8100
685	6850	8160
690	6900	8220
695	6950	8280
700	7000	8340
705	7050	8400
710	7100	8460
715	7150	8520
720	7200	8580
725	7250	8640
730	7300	8700
735	7350	8760
740	7400	8820
745	7450	8880
750	7500	8940
755	7550	9000
760	7600	9060
765	7650	9120
770	7700	9180
775	7750	9240
780	7800	9300
785	7850	9360
790	7900	9420
795	7950	9480
800	8000	9540
805	8050	9600
810	8100	9660
815	8150	9720
820	8200	9780
825	8250	9840
830	8300	9900
835	8350	9960
840	8400	10020
845	8450	10080
850	8500	10140
855	8550	10200
860	8600	10260
865	8650	10320
870	8700	10380
875	8750	10440
880	8800	10500
885	8850	10560
890	8900	10620
895	8950	10680
900	9000	10740
905	9050	10800
910	9100	10860
915	9150	10920
920	9200	10980
925	9250	11040
930	9300	11100
935	9350	11160
940	9400	11220
945	9450	11280
950	9500	11340
955	9550	11400
960	9600	11460
965	9650	11520
970	9700	11580
975	9750	11640
980	9800	11700
985	9850	11760
990	9900	11820
995	9950	11880
1000	10000	11940

Work Scope
Note 3)
Existing Exit Core Sign

TYPICAL USAGE

MOBILE	SHORT DURATION	INTERMEDIATE TERM DURATION	LONG TERM DURATION
✓	✓	✓	✓

GENERAL NOTES

- All traffic control devices illustrated are REQUIRED. Devices shown with the triangle symbol may be omitted when stated otherwise in the plans.
- See BC standards for sign details.
- If adequate longitudinal buffer length "B" does not exist between the work zone and the exit ramp, consideration should be given to closing the ramp.

Shade vehicle high intensity rotating, oscillating or strobe lights

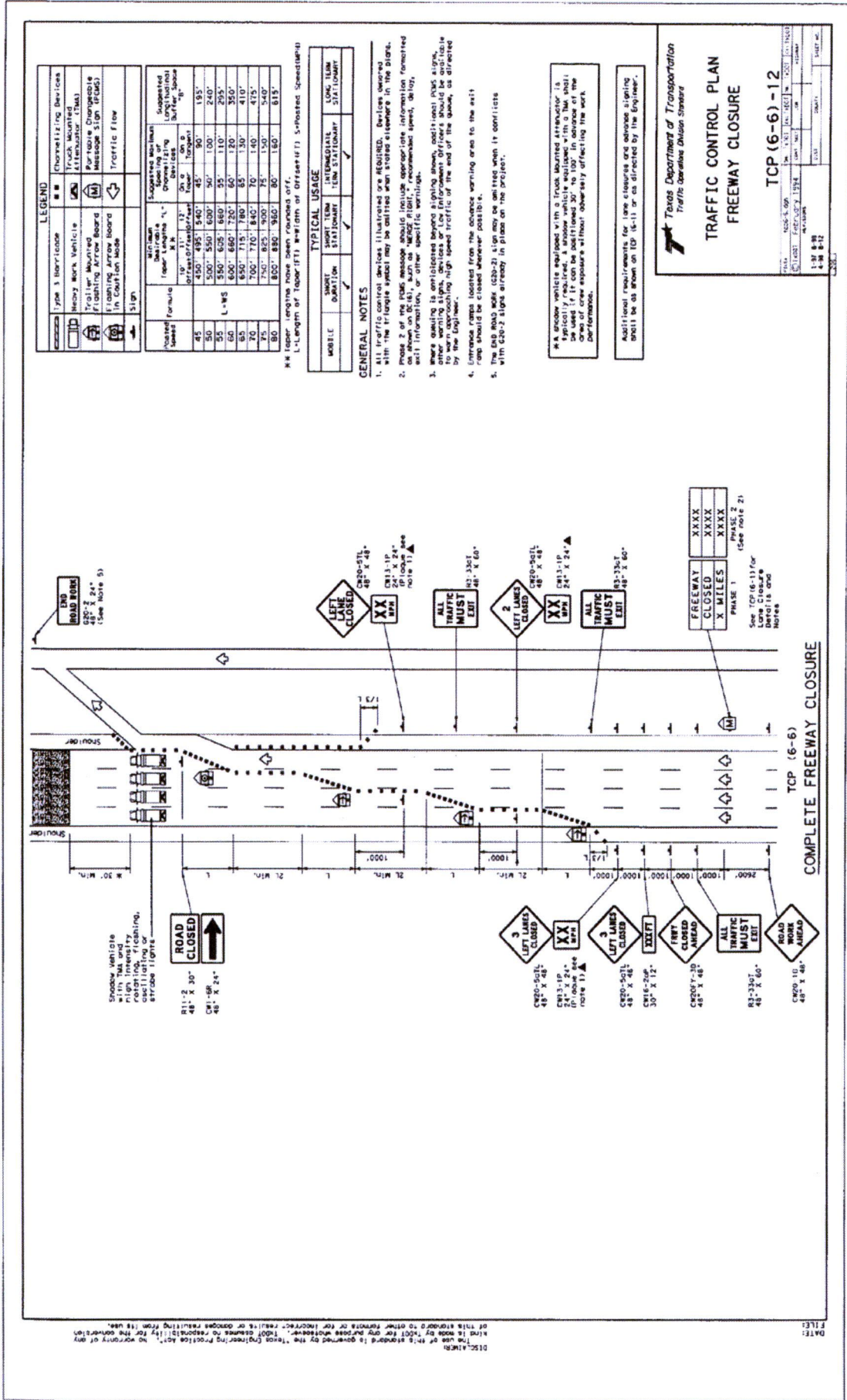
Additional requirements for lane closures and advance signing shall be as shown on TCP (6-5) or as directed by the Engineer.

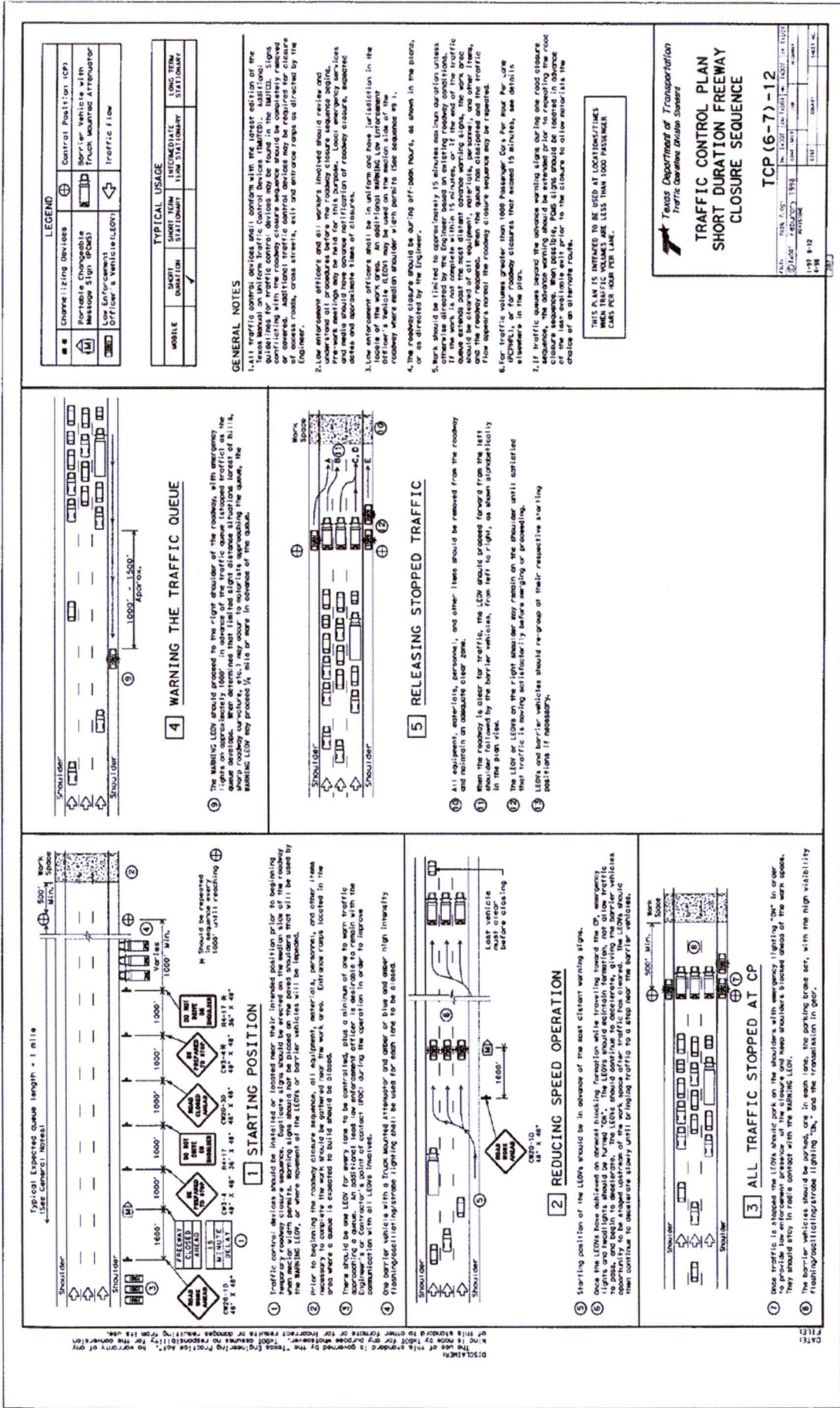


**TRAFFIC CONTROL PLAN
WORK AREA BEYOND EXIT RAMP**

TCP (6-5) - 12

DATE:	1-19-88	BY:	8-18
FILE:	6-12	SCALE:	AS SHOWN
PROJECT:	6314-60-001	SECTION:	6-12
DATE:	1-19-88	BY:	8-18
FILE:	6-12	SCALE:	AS SHOWN





LEGEND

●●	Channelizing Devices	⊕	Control Position (CP)
⊕	Portable Changeable Message Sign (PCMS)	⊕	Barrier Vehicle with Truck Mounted Attenuator
⊕	Low Enforcement Officer's Vehicle (LEOV)	⊕	Traffic Flow

TYPICAL USAGE

MOBILE	SHORT STATION	INTERMEDIATE STATION	LONG TERM STATIONARY
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GENERAL NOTES

1. All traffic control devices shall conform with the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD) and the Texas Department of Transportation (TxDOT) Traffic Control Manual. Additional traffic control devices may be required for closure of access roads, cross streets, exit and entrance ramps as directed by the Engineer.

2. Law enforcement officers and all workers involved should receive and understand all procedures before the roadway closure sequence begins. Pre-work meetings may be held for this purpose. Local emergency services should be notified in advance of the roadway closure. Appropriate signs, cones and other items should be placed in advance of the work area. An additional road law enforcement officer is desirable to remain with the communication with all LEOS involved.

3. The roadway closure should be in uniform and have jurisdiction in the location of the work area. An additional warning LEOS should be used on the median side of the roadway where motorist warning signs are placed (see item 1).

4. The roadway closure should be during off-peak hours, as shown in the plan, or as directed by the Engineer.

5. Work should be limited to approximately 15 minutes maximum duration unless the work is not complete within 15 minutes, or if the end of the traffic queue extends past the most distant advance warning signs, the work area should be extended to the next advance warning signs. The work area and the roadway reopened. When the queue has dissipated and the traffic flow appears normal the roadway closure sequence may be repeated.

6. For traffic volumes greater than 1000 Passenger Cars Per Hour Per Lane (PPHPL), or for roadway closures that exceed 15 minutes, see details elsewhere in the plan.

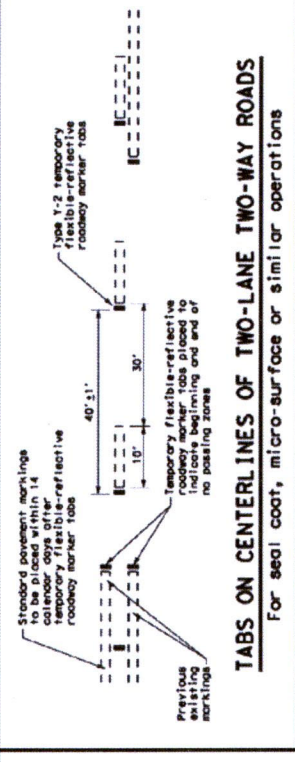
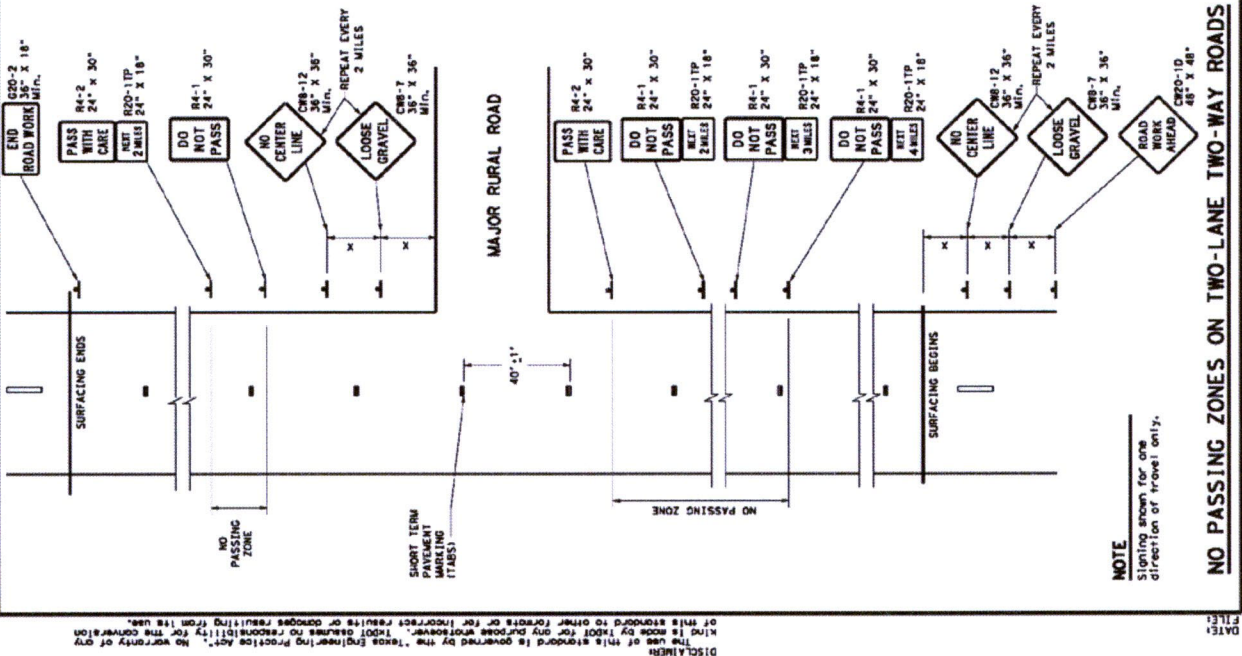
THIS PLAN IS INTENDED TO BE USED AT LOCATIONS/TIMES WHEN TRAFFIC VOLUMES ARE LESS THAN 1000 PASSENGER CARS PER HOUR PER LANE.

Texas Department of Transportation
Traffic Services Division Station

**TRAFFIC CONTROL PLAN
SHORT DURATION FREEWAY
CLOSURE SEQUENCE**

TCP (6-7)-12

DATE: 10/11/07
DRAWN BY: [Name]
CHECKED BY: [Name]
APPROVED BY: [Name]



"DO NOT PASS" SIGN (R4-1) and NO-PASSING ZONES

A. At the beginning of construction, all currently striped no-passing zones shall be aligned with the DO NOT PASS sign. The DO NOT PASS sign shall be placed on the centerline of the road at the beginning of each direction of travel except as otherwise provided herein. Signs marking these individual no-passing zones need not be covered prior to construction if the signs supplement the existing pavement markings.

B. At the discretion of the Engineer, in areas of numerous no-passing zones, several zones may be combined as a single zone. If passing is to be prohibited over one or more lengthy sections, a DO NOT PASS sign and a NEXT XX MILES plaque should be placed at the beginning of such zones. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. In areas where the no-passing zone is broken into segments, the end of the no-passing zone may be signed with a PASS WITH CARE sign and a NEXT XX MILES plaque.

C. Depending on traffic volume and length of sections, it may be desirable to prohibit passing throughout the project to prevent damage to windshield and lights. The DO NOT PASS sign and NEXT XX MILES plaque may be used in these situations. The DO NOT PASS sign and the NEXT XX MILES plaque should be placed at the beginning of the no-passing zone. The DO NOT PASS sign and the NEXT XX MILES plaque should be repeated every mile to the end of the no-passing zone. The entire length of such combined zones, appropriate DO NOT PASS and PASS WITH CARE signs should be placed at the beginning and end of the no-passing zone where the surfacing operation has stopped for the day. R4-1 and R4-2 are to remain in place until standard pavement markings are installed.

"NO CENTER LINE" SIGN (CWB-12)

A. Center line markings are yellow pavement markings that delineate the separation of travel lanes that have opposite directions of travel on a roadway. Divided highways do not typically have center line markings.

B. At the time construction activity ceases the existing center line markings (low volume roads may not have an existing centerline), a NO CENTER LINE (CWB-12) sign should be erected at the beginning of the work area and repeated at intervals of approximately 2 miles within the work area, beyond major interchanges and other locations deemed necessary by the Engineer.

C. The NO CENTER LINE signs are to remain in place until standard pavement markings are installed.

"LOOSE GRAVEL" SIGN (CWB-7)

A. When construction begins, a LOOSE GRAVEL (CWB-7) sign should be erected at each end of the work area and repeated at intervals of approximately 2 miles in rural areas and closer in urban areas.

B. The LOOSE GRAVEL signs are to remain in place until the condition no longer exists.

PAVEMENT MARKINGS

A. Temporary markings for surfacing projects shall be Temporary Flexible-Reflective Roadwork Marker Tabs unless otherwise approved by the Engineer. Tabs are to be installed to provide true alignment for striping areas or as directed by the Engineer. Tabs will be placed at the spacing indicated. Tabs should be applied to the pavement surface prior to the start of the surfacing operation. The cover over the reflective strip shall be removed. After the surfacing is rolled and swept, the cover over the reflective strip shall be removed.

B. Tabs shall not be used to simulate edge lines.

C. Tab placement for overlay/inlay operations shall be as shown on the RZ(S)TU standard sheet.

COORDINATION OF SIGN LOCATIONS

A. The location of warning signs at the beginning and end of a work area are to be coordinated with other signing typically shown on the Barricade and Construction Standards for project limits to ensure adequate sign spacing.

B. Where possible, the ROAD WORK AHEAD (CWB-10), LOOSE GRAVEL (CWB-7), and NO CENTER LINE (CWB-12) signs should be placed in the sequence shown following the OBEY WARNING SIGNS STATE LAW (R20-31) and TRAFFIC FINES DOUBLE (R20-31) sign, and one "I" sign spacing prior to the CONTRACTOR (C20-61) sign typically located at or near the limits of surfacing. LOOSE GRAVEL and NO CENTER LINE signs will then be repeated as described above.

Posted Speed M	Minimum Sign Spacing Distance ft
30	120'
35	160'
40	240'
45	320'
50	400'
55	500'
60	600'
65	700'
70	800'
75	900'

Conventional Roads Only

SHORT TERM MOBILE	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
✓	✓	✓	✓

TYPICAL USAGE

GENERAL NOTES

- The traffic control devices detailed on this sheet will be furnished and erected as directed by the Engineer on sections of roadway where tabs must be placed prior to the surfacing operation which will cover or obliterate the existing pavement markings.
- The devices shown on this sheet are to be used to supplement those required by the BC Standards or other required devices in the BC Standards.
- Signs shall be erected as detailed on the BC Standards or the Compliant Work Zone Traffic Control Devices List (CWTZCD) on supports conforming to the Intermediate-Term Work Zone Sign Supports.
- When surfacing operations take place on divided highways, freeways or expressways, the size of the construction warning signs shall be 48" x 48".
- Signs on divided highways, freeways and expressways will be placed on both right and left sides of the road on roadway conditions as directed by the Engineer.

Traffic Control Division Standard

TRAFFIC CONTROL DETAILS FOR SURFACING OPERATIONS

TCP (7-1)-13

REV: 10-1-09
 10-1-09
 4-18-09
 1-19-13

DATE: March 1981
 4-18-09
 1-19-13

BY: JST
 CHECKED: JST
 DATE: 3-17-09

PROJECT: 6314-60-001
 SHEET NO: 13

DISCLAIMER: The use of this standard is governed by the Texas Engineering Practice Act. No warranty of any kind is made by TxDOT for any purpose whatsoever. TxDOT assumes no responsibility for the construction of this standard or other errors or omissions resulting from its use.

EXHIBIT “B”

CRP

PRICING

Contract Description:

MBGFR

Provider:

TIBH

Item Number:	Description:	UOM	Current Price	Proposed Price	Counter offer
0450-6042	RAIL (TY PR 1)	LF	\$150.00	\$150.00	approved
0496-6099	REMOVE RAIL (METALELEMENTS)	LF	\$3.00	\$3.00	approved
0540-6001	MTL W-BEAM GD FEN (TIM POST)	LF	\$21.00	\$21.00	approved
0540-6005	TERMINAL ANCHOR SECTION	EA	\$350.00	\$350.00	approved
0540-6010	MTL W-BEAM GD FEN ADJUSTMENT	LF	\$10.00	\$10.00	approved
0540-6006	MTL BEAM GD FEN TRANS (THRIE-BEAM)	EA	\$1,250.00	\$1,800.00	\$1,500.00
0540-6016	DOWNSTREAM ANCHOR TERMINAL (DAT) SECTION	EA	\$1,000.00	\$1,200.00	approved
0540-6017	METAL BEAM GUARD FENCE (LONG SPAN SYSTEM)	LF	\$0.00	\$35.00	\$30.00
0542-6001	REMOVING METAL BEAM GUARD FENCE	LF	\$3.00	\$3.00	approved
0542-6002	REMOVING TERMINAL ANCHOR SECTION	EA	\$100.00	\$100.00	approved
0542-6004	RM MTL BM GD FEN TRANS (THRIE BEAM)	EA	\$75.00	\$100.00	approved
0542-6005	RM MTL BM GD FEN TRANS (T101)	EA	\$450.00	\$450.00	approved
0544-6001	GUARD RAIL END TREATMENT (INSTALL)	EA	\$2,300.00	\$2,300.00	approved
0544-6003	GUARD RAIL END TREATMENT (REMOVE)	EA	\$300.00	\$300.00	approved
0545-6003	CRASH CUSHION ATTEN (MOVE & RESET)	EA	\$1,800.00	\$2,000.00	approved
0545-6005	CRASH CUSHION ATTEN (REMOVE)	EA	\$1,000.00	\$1,000.00	approved
0545-6024	CRASH CUSHION ATTEN (INSTALL) (TRACC)	EA	\$16,000.00	\$20,000.00	\$15,000.00
0545-6025	CRASH CUSHION ATTEN (INSTALL) (REACT)(N)	EA	\$23,000.00	\$23,000.00	approved
0545-6026	CRASH CUSHION ATTEN (INSTALL) (QUAD)(N)	EA	\$17,500.00	\$20,000.00	approved
0545-6027	CRASH CUSHION ATTEN (INSTALL) (QUAD)(W)	EA	\$26,000.00	\$26,500.00	approved
0550-6001	CHAIN LINK FENCE (INSTALLATION)(6')	LF	\$9.50	\$10.00	approved
0550-6002	CHAIN LINK FENCE (REPAIR)(6')	LF	\$5.00	\$10.00	approved
0550-6007	CHAIN LINK FENCE (REPAIR)(4')	LF	\$9.50	\$10.00	approved
0770-6001	REPAIR RAIL ELEMENT (W - BEAM)	LF	\$11.00	\$12.00	approved
0770-6054	REPAIR RAIL ELEMENT (W - BEAM) (LABOR)	LF	\$5.00	\$5.00	approved
0770-6010	REM/REPL TIMBER/STL POST W/O CONC FND	EA	\$40.00	\$40.00	approved
0770-6011	REM/REPL TIMBER/STL POST W/ CONC FND	EA	\$50.00	\$50.00	approved
0770-6017	REALIGN POSTS	EA	\$15.00	\$15.00	approved
0770-6019	REMOVE AND REPLACE BLOCK OUT	EA		\$20.00	approved
0770-6027	REMOVE GORAIL END TRT/REPL WITH SGT	EA	\$2,250.00	\$2,500.00	approved
0770-6021	REPLACE SINGLE GORAIL TERMINAL RAIL	LF	\$15.00	\$15.00	approved
0770-6028	REPL SINGLE GORAIL TERM IMPACT HEAD	EA	\$900.00	\$900.00	approved
0770-6022	REPLACE SINGLE GORAIL TERMINAL POST	EA	\$42.00	\$45.00	approved
0770-6030	REPLACE SGT CABLE ASSEMBLY	EA		\$200.00	\$75.00
0770-6031	REPLACE CABLE ANCHOR	EA		\$100.00	\$85.00
0770-6032	REPLACE SGT STRUT	EA		\$50.00	approved
0770-6033	REPLACE SGT OBJECT MARKER	EA		\$45.00	\$25.00
0770-6052	REPAIR STEEL POST WITH BASE PLATE	EA	\$200.00	\$200.00	approved
0770-6046	REMOVE AND RESET SGT IMPACT HEAD (FURNISHED)	EA	\$250.00	\$250.00	approved
0772-6001	POST AND CABLE FENCE (REMOVAL)	LF	\$3.00	\$3.00	approved
0772-6003	POST AND CABLE FENCE (NEW INSTALLATION)	LF	\$6.50	\$10.00	approved
0772-6004	POST AND CABLE FENCE (NEW CONC ANCHOR)	EA	\$50.00	\$175.00	\$100.00
0772-6005	POST AND CABLE FENCE (REM/REPL POSTS)	EA	\$50.00	\$50.00	approved
0772-6006	POST AND CABLE FENCE (REM/REPL CONC ANCHR)	EA	\$100.00	\$200.00	\$125.00
0774-6006	REPAIR (TRACC)	EA	\$2,600.00	\$2,600.00	approved
0774-6008	REPAIR (WIDE TRACC)	EA	\$2,600.00	\$2,600.00	approved
0774-6018	REPAIR (CATGR-FRONT SECTION)	EA	\$2,500.00	\$7,000.00	\$3,500.00
0774-6019	REPAIR (CATGR-END SECTION)	EA	\$1,500.00	\$2,500.00	approved
0774-6023	REPAIR REACT (N) (MISC HARDWARE)	EA		\$2,500.00	\$2,500.00
0774-6027	REPAIR REACT (N) (CYLINDERS)	EA		\$3,500.00	\$3,500.00
0774-6028	QUAD (N) (BAY) (REPAIR ONLY)	EA	\$750.00	\$1,600.00	\$1,600.00
0774-6083	QUAD (N) (BAY) CARTRIDGE	EA	\$1,200.00	\$1,300.00	approved
0774-6084	QUAD (N) (BAY) NOSE ASSEMBLY	EA	\$1,000.00	\$1,000.00	approved
0774-6029	QUAD (W) (BAY) (REPAIR ONLY)	EA	\$750.00	\$1,600.00	approved
0774-6086	QUAD (W) (BAY) CARTRIDGE	EA	\$1,200.00	\$1,200.00	approved
0774-6087	QUAD (W) (BAY) NOSE ASSEMBLY	EA	\$1,000.00	\$1,200.00	\$1,100.00
0774-6088	QUAD (W) (BAY) Diaphragm	EA	\$1,000.00	\$1,200.00	\$1,100.00
0543-6017	CABLE BARRIER TERMINAL SECTION (TL-3)	EA	\$2,700.00	\$2,900.00	\$2,800.00
0543-6022	REMOVE CABLE BARRIER TERMINAL SECTION	EA	\$1.00		\$500.00
0771-6001	REPLACE POSTS (TL 3)	EA	\$110.00	\$136.00	approved
0771-6005	REPAIR CONCRETE FOUNDATION (TL 3)	EA	\$225.00	\$2,500.00	\$250.00
0771-6009	REPLACE CABLE (TL 3)	LF	\$7.50	\$5.00	approved
7053-6001	CLEAN TRAFFIC ATTENUATORS (TRACC) (N)	EA	\$500.00	\$500.00	approved
7053-6002	CLEAN TRAFFIC ATTENUATORS (QUAD) (N)	EA	\$500.00	\$500.00	approved
7053-6003	CLEAN TRAFFIC ATTENUATORS (QUAD) (W)	EA	\$500.00	\$500.00	approved
7053-6004	CLEAN TRAFFIC ATTENUATORS (REACT 350)	EA	\$500.00	\$500.00	approved
7053-6005	RIGHT OF WAY MARKERS (LABOR ONLY)	EA	\$25.00	\$30.00	approved
7053-6008	TMA	DAY	\$400.00	\$410.00	approved
New Item	QUAD FENDER PANEL	EA		\$1,000.00	\$750.00
New Item	REACT CABLE 350 (5 BAY)	EA		\$1,500.00	\$1,200.00
New Item	REACT DECAL	EA		\$350.00	approved
New Item	REACT CABLE 350 (9 BAY)	EA		\$1,500.00	\$1,250.00
New Item	CABLE RELEASE POST	EA		\$500.00	approved
New Item	ANCHOR POST	EA		\$800.00	approved
New Item	REACT 350 CABLE HOLDERS	EA		\$350.00	approved
New Item	FAST TRACK CENTER PANELS	EA		\$1,200.00	approved

TIBH APPROVED 2018 GUARD RAIL RATES / HIDALGO COUNTY

ITEM CODE	DESCRIPTION	UNIT	UNIT \$
1	0450 6042	RAIL (TY PR1)	LF \$ 150.00
2	0496 6099	REMOVE RAIL (METAL ELEMENTS)	LF \$ 3.00
3	0540-6001	MTL W-BEAM GD FEN (TIM POST)	LF \$ 21.00
4	0540-6005	TERMINAL ANCHOR SECTION	EA \$ 350.00
5	0540-6010	MTL W-BEAM GD FEN ADJUSTMENT	LF \$ 10.00
7	0540-6006	MTL BEAM GD FEN TRANS (THRIE-BEAM)	EA \$ 1,500.00
8	0540-6016	DOWNSTREAM ANCHOR TERMINAL (DAT) SECTION	EA \$ 1,200.00
9	0540-6017	METAL BEAM GUARD FENCE (LONG SPAN SYSTEM)	LF \$ 30.00
10	0542 6001	REMOVING METAL BEAM GUARD FENCE	LF \$ 3.00
11	0542 6002	REMOVING TERMINAL ANCHOR SECTION	EA \$ 100.00
12	0542 6004	RM MTL BM GD FEN TRANS (THRIE BEAM)	EA \$ 100.00
13	0542 6005	RM MTL BM GD FEN TRANS (T101)	EA \$ 450.00
14	0544-6001	GUARD RAIL END TREATMENT (INSTALL)	EA \$ 2,300.00
15	0544-6003	GUARD RAIL END TREATMENT (REMOVE)	EA \$ 300.00
16	0545 6003	CRASH CUSHION ATTEN (MOVE & RESET)	EA \$ 2,000.00
17	0545 6005	CRASH CUSHION ATTEN (REMOVE)	EA \$ 1,000.00
18	0545 6024	CRASH CUSHION ATTEN (INSTALL) (TRACC)	EA \$ 16,000.00
19	0545 6025	CRASH CUSHION ATTEN (INSTALL) (REACT)(N)	EA \$ 23,000.00
20	0545 6026	CRASH CUSHION ATTEN (INSTALL) (QUAD)(N)	EA \$ 20,000.00
21	0545 6027	CRASH CUSHION ATTEN (INSTALL) (QUAD)(W)	EA \$ 26,500.00
22	0550-6001	CHAIN LINK FENCE (INSTALLATION)(6')	LF \$ 10.00
23	0550-6002	CHAIN LINK FENCE (REPAIR)(6')	LF \$ 10.00
24	0550-6007	CHAIN LINK FENCE (REPAIR)(4')	LF \$ 10.00
25	0770-6001	REPAIR RAIL ELEMENT (W - BEAM)	LF \$ 12.00
26	0770-6054	REPAIR RAIL ELEMENT (W - BEAM) (LABOR)	EA \$ 6.00
27	0770 6010	REM/REPL TIMBER/STL POST W/O CONC FND	EA \$ 40.00
28	0770 6011	REM/REPL TIMBER/STL POST W/ CONC FND	EA \$ 60.00
29	0770 6017	REALIGN POSTS	EA \$ 15.00
30	0770-6019	REMOVE AND REPLACE BLOCK OUT	EA \$ 20.00
31	0770 6027	REMOVE GDRAIL END TRT/REPL WITH SGT	EA \$ 2,500.00
32	0770 6021	REPLACE SINGLE GDRAIL TERMINAL RAIL	LF \$ 15.00
33	0770 6028	REPLACE SINGLE GDRAIL TERM IMPACT HEAD	EA \$ 900.00
34	0770 6022	REPLACE SINGLE GDRAIL TERMINAL POST	EA \$ 45.00
35	0770-6030	REPLACE SGT CABLE ASSEMBLY	EA \$ 75.00
36	0770 6031	REPLACE CABLE ANCHOR	EA \$ 85.00
37	0770-6032	REPLACE SGT STRUT	EA \$ 60.00
38	0770-6033	REPLACE SGT OBJECT MARKER	EA \$ 25.00
39	0770-6052	REPAIR STEEL POST WITH BASE PLATE	EA \$ 200.00
40	0770-6046	REMOVE AND RESET SGT IMPACT HEAD (FURNISHED)	EA \$ 250.00
41	0772-6001	POST AND CABLE FENCE (REMOVAL)	LF \$ 3.00
42	0772-6003	POST AND CABLE FENCE (NEW INSTALLATION)	LF \$ 10.00
43	0772-6004	POST AND CABLE FENCE (NEW CONC ANCHOR)	EA \$ 100.00
44	0772-6005	POST AND CABLE FENCE (REMOV/REPL POSTS)	EA \$ 50.00
45	0772-6006	POST AND CABLE FENCE (REMOVE CONC ANCHOR)	EA \$ 125.00
46	0774 6006	REPAIR (TRACC)	EA \$ 2,600.00
47	0774 6008	REPAIR (WIDE TRACC)	EA \$ 2,600.00
48	0774 6018	REPAIR (CATGR-FRONT SECTION)	EA \$ 3,500.00
49	0774 6019	REPAIR (CATGR-END SECTION)	EA \$ 2,500.00
50	0774 6023	REPAIR REACT (N) (MISC HARDWARE)	EA \$ 2,500.00
54	0774 6027	REPAIR REACT (N) (CYLINDERS)	EA \$ 3,500.00
55	0774 6028	QUAD (N) (BAY) (REPAIR ONLY)	EA \$ 1,600.00
56	0774 6083	QUAD (N) (BAY) CARTRIDGE	EA \$ 1,300.00
57	0774 6084	QUAD (N) (BAY) NOSE ASSEMBLY	EA \$ 1,000.00
58	0774 6029	QUAD (W) (BAY) (REPAIR ONLY)	EA \$ 1,600.00
59	0774 6086	QUAD (W) (BAY) CARTRIDGE	EA \$ 1,200.00
60	0774 6087	QUAD (W) (BAY) NOSE ASSEMBLY	EA \$ 1,200.00
61	0774 6088	QUAD (W) (BAY) DIAPHRAGM	EA \$ 1,200.00
62	0543-6017	CABLE BARRIER TERMINAL SECTION (TL-3)	EA \$ 2,800.00
63	0543-6022	REMOVE CABLE BARRIER TERMINAL SECTION	EA \$ 500.00
64	0771-6001	REPLACE POSTS (TL 3)	EA \$ 136.00
65	0771-6005	REPAIR CONCRETE FOUNDATION (TL 3)	EA \$ 250.00
66	0771-6009	REPLACE CABLE (TL 3)	LF \$ 5.00
67	7053-6001	CLEAN TRAFFIC ATTENUATORS (TRACC) (N)	EA \$ 500.00
68	7053-6002	CLEAN TRAFFIC ATTENUATORS (QUAD) (N)	EA \$ 500.00
69	7053-6003	CLEAN TRAFFIC ATTENUATORS (QUAD) (W)	EA \$ 500.00
70	7053-6004	CLEAN TRAFFIC ATTENUATORS (REACT 350)	EA \$ 500.00
71	7053-6005	RIGHT AWAY MARKERS (LABOR ONLY)	EA \$ 30.00
72	7053-6008	TMA	EA \$ 410.00
73	NEW ITEM	QUAD FENDER PANER	EA \$ 750.00
74	NEW ITEM	REACT CABLE 350 (6 BAY)	EA \$ 1,200.00
75	NEW ITEM	REACT DECAL	EA \$ 350.00
76	NEW ITEM	REACT CABLE 350 (9 BAY)	EA \$ 1,250.00
77	NEW ITEM	CABLE RELEASE POST	EA \$ 600.00
78	NEW ITEM	ANCHOR POST	EA \$ 800.00
79	NEW ITEM	REACT 350 CABLE HOLDERS	EA \$ 350.00
80	NEW ITEM	FAST TRACK CENTER PANELS	EA \$ 1,200.00

EXHIBIT “C”

CERTIFICATE OF INSURANCE



AGENDA
CC REGULAR
HIDALGO COUNTY
COMMISSIONERS COURT MEETING
April 24, 2018
9:30 A.M.

NOTICE is hereby given in accordance with Chapter 551, Texas Government Code, that a SPECIAL MEETING of the Commissioners' Court will be held at the Edinburg Council Chambers 415 W. University Drive, Edinburg, Hidalgo County, Texas. Discussion and possible action relating to the following business will be transacted:

1. **Roll Call**
Commissioner Joseph Palacios was the only absentee during the meeting.
2. **Pledge of Allegiance**
Judge Ramon Garcia led the courtroom in reciting the Pledge of Allegiance.
3. **Prayer**
Opening prayer offered by Julia Sullivan.
4. **Approval of Consent Agenda**
The court moved to approve the consent agenda with the exception of Items. 9.A. and 10.D. to be pulled for discussion.
Court proceeded to Item. 15.A.
5. **County Judge's Office:**
 - A. **AI-64589** Consideration and approval of a proclamation declaring the week of April 30 through May 4 as Jury Appreciation Week.
Judge Garcia joined the meeting.
On motion by COMMISSIONER PCT. 3, JOE M. FLORES, seconded by COMMISSIONER PCT. 1, DAVID FUENTES, the Court made a UNANIMOUS vote of approval.
Vote: 4 - 0 – Unanimously
Ricardo Contreras invited the court and the entire public to the upcoming 10th Annual Open House in celebration of Jury Appreciation Week.
Commissioner Fuentes stepped away from the meeting.
6. **District Attorney's Office:**
 - A. **AI-64590** Requesting authorization and approval to purchase promotional items as a public purpose pursuant to the Tex. Const. Art. 3 Sec. 52.
On motion by COMMISSIONER PCT. 2, EDUARDO "EDDIE" CANTU, seconded by COMMISSIONER PCT. 3, JOE FLORES, the Court made a UNANIMOUS vote of approval.
Vote: 3 - 0 -Unanimously
7. **District Clerk - Laura Hinojosa:**
 - A. **AI-64370** Discussion, consideration and approval of changing the fee for noncertified copies of records (hardcopy and electronic format) from the current \$1.00 per page to \$.15 per page, pursuant to Gov't. Code, Sec. 51.318(b)(8).
No action taken on this item.
8. **Sheriff's Office:**

Vote: 4 - 0 – Unanimously

17. **Precinct #4 - Comm. Palacios:**

- A. **AI-64625** Status update on Renovations at J.R. Milo Ponce Park Project

Jose Caso updated the court on the renovations of the Precinct 4, J.R. Milo Ponce Park, they expect to have a grand opening on April 29, 2018 at 1:00 p.m. the entire public is invited.

18. **Budget & Management:**

- A. **AI-64610** Approval of medical coverage for the temporary employees listed below as per the Affordable Care Act (ACA) IRS Code Section 4980H - Shared responsibility for employers regarding health insurance.
1. E#205320 effective 6/1/18
2. E#221007 effective 6/1/18

On motion by COMMISSIONER PCT. 3, JOE M. FLORES, seconded by COMMISSIONER PCT. 2, EDUARDO "EDDIE" CANTU, the Court made a UNANIMOUS vote of approval.

Vote: 4 - 0 - Unanimously

B. **Budget Appropriations:**

1. **AI-64608** Pct 1 ICA Midway Rd (1200):
A. Approval of certification of revenues as certified by the County Auditor for revenues received from cities of Donna and Weslaco for the Midway Road project
B. Approval of 2018 appropriation of funds into Pct.1 Midway Road project in the total amount of \$387,646.90

On motion by COMMISSIONER PCT. 3, JOE M. FLORES, seconded by COMMISSIONER PCT. 1, DAVID FUENTES, the Court made a UNANIMOUS vote of approval on A and B.

Vote: 4 - 0 – Unanimously

2. **AI-64424** CO2016-New Courthouse (1350):
a. Approval of certification of revenues as certified by the County Auditor for revenues received from interest earnings.
b. Approval of 2018 appropriation of funds in the amount of \$127,498.17 into CO2016-New Courthouse.

Mr. Cruz corrected the amount as follows: amount should be \$126,828.03 into the CO2016 Courthouse fund.

On motion by COMMISSIONER PCT. 1, DAVID FUENTES, seconded by COMMISSIONER PCT. 2, EDUARDO "EDDIE" CANTU, the Court made a UNANIMOUS vote of approval on A and B with corrected amount.

Vote: 4 - 0 – Unanimously

3. **AI-64419** Pct 1 M6W (1303/1315):
a. Approval of certification of revenues as certified by the County Auditor for revenues received from the Hidalgo County Drainage District No.1 for 3rd Annual payment relating to the reimbursement of professional service expenses for the J-09 Drain Project.
b. Approval of appropriation and interfund transfer in the amount of \$250,000.00 to fund TXDOT Pct 1 Mile 6 West project.

On motion by COMMISSIONER PCT. 1, DAVID FUENTES, seconded by COMMISSIONER PCT. 3, JOE M. FLORES, the Court made a UNANIMOUS vote of approval.

Vote: 4 - 0 - Unanimously

19. **Purchasing Department - Notes:**
A. FOR ANY CONTRACT(S) AWARDED AND APPROVED UNDER THIS AGENDA, EXECUTED COPIES OF THE CONTRACT(S) WILL BE AVAILABLE ON THE COUNTY INTRA-NET WEBSITE AND WILL BE FORWARDED VIA E-MAIL, FAX OR HAND DELIVERED TO HIDALGO COUNTY AUDITOR'S OFFICE.
B. ANY AND ALL REQUESTS FOR PAYMENT(S) APPROVED WILL BE SUBJECT TO COUNTY AUDITORS PROCESSING PROCEDURES INCLUDING AUTHORITY FOR COUNTY TREASURER TO ISSUE PAYMENT(S)/CHECK(S).

- A. **Hidalgo County**

1. **AI-64627** Acceptance and Approval of the Hidalgo County-Procedures for Selection and Contracting with Professional Service Providers for Federal Road Projects as drafted by the Purchasing Dept. and reviewed and approved by TXDOT Pharr District with final review as to form by legal counsel, Atlas/Hall & Rodriguez.

On motion by COMMISSIONER PCT. 1, DAVID FUENTES, seconded by COMMISSIONER PCT. 2, EDUARDO "EDDIE" CANTU, the Court made a UNANIMOUS vote of approval.

Vote: 4 - 0 – Unanimously

2. **AI-64584** A. Requesting exemption from competitive bidding requirements under Tx. Local Government Code, 262.024(C): '.....a state agency of this state....';

APPROVED

On motion by COMMISSIONER PCT. 1, DAVID FUENTES, seconded by COMMISSIONER PCT. 2, EDUARDO "EDDIE" CANTU, the Court made a UNANIMOUS vote of approval.

Vote: 4 - 0 – Unanimously

B. Pursuant to Texas Human Resources Code establishes procedures for the State Use Program, Title 40, Tx. Administrative Code, Ch. 806 for the Texas Workforce Commission's through Texas Industries for Blind and Handicapped-TIBH's Community Rehabilitation Program-CPR [detailed in supporting documentation herein] to approve a contract between Hidalgo County and CPR, RGR Industries, Inc. for the provision of: Turnkey Solutions for materials/installation of Guardrails and Related Supplies and subject to compliance with statutory documents such as form 1295 if/when applicable.

Martha Salzar requested approval subject to compliance.



On motion by COMMISSIONER PCT. 3, JOE M. FLORES, seconded by COMMISSIONER PCT. 2, EDUARDO "EDDIE" CANTU, the Court made a UNANIMOUS vote of approval subject to compliance.

Vote: 4 - 0 - Unanimously

3. **AI-64586** a. Presentation of scoring grid (for the purpose of CC qualifying the responses received so as to continue the CMAR process for RFQ/P No. 2018-023-02-07-LHS: "Construction Manager at Risk (CMAR) for Construction of Memorial Park Ph. I." in Precinct No. 4.:

Respondents Name	Evaluator 1 Score/Rank	Evaluator 2 Score/Rank	Evaluator 3 Score/Rank	Evaluator 4 Score/Rank	Evaluator 5 Score/Rank	Sum of Evaluators Rankings	Final Rank
Holchemont LTD	66.4	62	62	65.9	62	318.3	1
Granchelli Construction	55.5	57.6	57.9	59.6	31	261.60	2

On motion by COMMISSIONER PCT. 3, JOE M. FLORES, seconded by COMMISSIONER PCT. 2, EDUARDO "EDDIE" CANTU, the Court made a UNANIMOUS vote of approval.

Vote: 4 - 0 - Unanimously

b. Authority to commence the negotiation process with the qualified/ranked firm of **Holchemont LTD.** by the following selected/designated parties [HCCC to list names with B2Z Engineering/The Warren Group leading] with the Purchasing Department as a facilitator for the purpose of a letter of engagement/contract with construction manager at risk for the construction of The Memorial Park Phase I.

On motion by COMMISSIONER PCT. 2, EDUARDO "EDDIE" CANTU, seconded by COMMISSIONER PCT. 3, JOE FLORES, the Court made a UNANIMOUS vote of approval.

Vote: 4 - 0 -Unanimously

c. Presentation of the monthly report by project manager, B2Z Engineering, of the "Construction of the New Memorial Park Phase I."

Martha Salazar asked the court to take no action on this item.

No action taken on this item.

B. Pct. 1